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Table of Contents

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ORIGINAL ARTICLES— PAGE.

"A Plea for Greater Cooperation Between the Sciences of Medicine and Engineering in Relation to Industries," by J. S. JUST, M.I.E. (Aust.), M.I.E.E., M.Am.I.E.E. 2

"The Treatment of Pelvic Abscesses," by HUGH C. TRUMBLE, M.C., M.B., B.S., F.R.C.S. 4

"Gastric Chlorides, Their Origin and Significance," by F. S. HANSMAN, M.B., Ch.M., M.R.C.P., EMILY M. DAY, M.B., Ch.M., and R. CLIFTON, M.B., Ch.M., B.Sc. 6

"The Operation for Acute Mastoiditis and its After Treatment," by H. SEAWARD MARSH, M.B., Ch.M. 13

REPORTS OF CASES—

"Two Cases of Complete Laryngectomy and a Simple but Effective Artificial Larynx," by R. GRAHAM BROWN 15

"Two Cases of Transplantation of the Ureters," by GLEN H. BURNELL, B.S., M.D. 18

"Removal of Bladder and Urethra in the Female for Malignant Disease," by F. A. MAGUIRE, D.S.O., M.D., Ch.M., F.R.C.S. 19

NOTES ON BOOKS—

A Hospital Pharmacopœia 20

LEADING ARTICLES—

A Federal Research Institution 21

CURRENT OCMMENT— PAGE.

The Wassermann Reaction and Treatment in Syphilis 22

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Gynæcology 24

Obstetrics 24

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific 26

UNIVERSITY INTELLIGENCE—

The University of Sydney 33

CORRESPONDENCE—

Snake Bite 33

OBITUARY—

Percy Langford Townley 35

BOOKS RECEIVED 36

DIARY FOR THE MONTH 36

MEDICAL APPOINTMENTS 36

MEDICAL APPOINTMENTS VACANT, ETC. 36

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 36

EDITORIAL NOTICES 36

A PLEA FOR GREATER COOPERATION BETWEEN THE SCIENCES OF MEDICINE AND ENGINEERING IN RELATION TO INDUSTRIES.[1]

By J. S. JUST, M.I.E. (Aust.), M.I.E.E., M.Am.I.E.E.,
Brisbane.

THIS meeting between members of scientific bodies for the purpose of discussing phases of welfare of the community, if continued, cannot but have far reaching results and benefit mankind. The hope of the Institute of Engineers, Australia, on whose behalf I have the honour to address you tonight, is that this meeting will be the forerunner of very many similar meetings and that both the medical and engineering professions may by an exchange of ideas enable the maximum efficiency to be obtained in the minimum time.

These notes have been collected and are being placed before the joint meeting, not because they may raise any new point, but chiefly to indicate a few directions in which the author believes that discussion and exchange of ideas may be begun. From such discussions perhaps future meetings may become assured and each meeting take perhaps a more definite branch of industrial welfare than is being attempted this evening.

Unfortunately the suspicion existing between employer and employee makes many references difficult, but it is hoped that even these difficulties will not prevent the adoption on sound lines of welfare methods.

In general it would appear that someone is directly or indirectly responsible for all industrial accidents and for sickness arising from industrial occupations. This responsibility may be due to inexperience, poor judgement, unsuitability of employee for health reasons or inattention to details on the part of someone. Only by using the greater experience of those scientifically trained to watch the effect upon mankind, cooperating with the engineering profession, are we able to deal with, improve conditions or remove causes. Broadly we may classify our troubles as industrial fatigue and the great importance of this meeting—the first between representatives of the British Medical Association and The Institution of Engineers, Australia—will be judged by action taken to reduce the causes of such fatigue.

Besides inefficiency, industrial fatigue causes so much loss of time through sickness and accidents, that it becomes of prime importance to our commercial community. Much has been done in the recent past by the association between the sciences of medicine and engineering chiefly in the direction of sanitation and water supply. Large cities have become possible and the health and comfort which means the happiness and contentment of the peoples, improved to a remarkable degree. In fact together they have made present day civilization a possibility, frequently making available land for settlement which without their aid and application was considered unsuitable for a white man to occupy.

That great engineering feat, the Panama Canal, was made possible only by the cooperation of the medical scientist with the engineer.

Speaking generally, it may perhaps be stated that the chief factors governing industrial fatigue (the direct cause of accidents and inefficiency) are dust, water, sanitation, poisoning, eye strain (due to defective illumination or over-exertion) and muscular fatigue (chiefly from the temperature or change of temperature met with in carrying out work), also the absence of conditions suitable for economic working.

Dust.

The first factor, dust, is perhaps the greatest of all and I am glad that the teaching of hygiene in our schools now encourages us to make the maximum use of such ventilation of living and sleeping apartments as the architects have provided. The advent of electricity has made available a vacuum process of cleaning so that the old job of annual carpet removal has ceased. We do not now see our carpets being swept with hard brooms by women folk with heads tied up in netting, but instead a scientific method of dust removal is practised in the home and factory. Those men controlling industries should give every encouragement to our engineers in their endeavour to reduce the dust nuisance, from whatever cause arising. Street traffic will in the future become more speedy and congested and the types of roadway of the past will be valueless. The impossible horse broom that is still found in our city streets should be prohibited.

In most industrial processes the dust nuisance exists. Only in a very small percentage does it cease altogether and yet how few, if any, industries are there in which scientifically designed ventilators are installed to reduce to a minimum its effect upon the worker. It is surely not sufficient that we should determine the cubic space that must be allotted to each individual under conditions dictated by each trade; should we not rather specify the volume of fresh clean air that should be provided for each person. Much comfort can be gained by directing the dust away from the operator and replacing the atmosphere within with clean and fresh air purified by sunlight. A current of air directing the dust around the worker is probably more damaging than reasonably still air in a confined space. The medical scientists can advise the engineer of the danger of those almost invisible and less oppressive dust particles which arise from various processes, but which by their nature often cause more harm to the worker than dust of a purely irritant character. The engineer on his part should wherever practicable place exhausters over all processes in which dust may arise, and in addition arrange the ventilation of the room to give a flow of air from the operator to the machine creating dust and not the reverse. In this and in fact in all processes conducted within buildings the architect should confer with the medical authority and the engineer. Commercial men chiefly through ignorance lose big dividends in loss of efficiency of the worker whilst at work and loss of time due to sick-

[1] Read at a meeting of the Queensland Branch of the British Medical Association on March 4, 1927.

ness in an attempt to save a small daily expediture on mechanical ventilation. This inefficiency is a distinct loss to the worker and we believe is desired neither by employer nor employee.

Water.

It is necessary for the welfare of a city or a factory that ample quantities of pure clean water shall be provided and the employees should be encouraged in cleanliness. The provision of water in a city is usually well controlled and suitable for use when drawn direct from the pipe line. It should not be necessary for the employee to leave his work and proceed to other parts of the building, even perhaps to the lavatory block, to reach the nearest source of supply or go without. Drinking fountains should be placed near the worker who should be encouraged to drink good water. In all processes in which dust is present, baths should be provided and employees should be encouraged not only to use them, but also to be suitably clothed for their work, discarding dusty clothes as early as practicable.

The importance of sanitation is not being overlooked, yet how often do we find such conveniences badly lighted and ventilated and poorly finished. As cleanliness is one of the all-important principles of sanitation, surely such blocks should be well lighted, ventilated and capable of being easily cleaned. Well lighted and ventilated places never collect dirt and inspection of the dark and better lighted corners of any workroom will prove the truth of the statement relative to the general cleanliness of the premises.

Poisoning.

It is recorded that the greatest number of cases of industrial poisoning arise from want of cleanliness on the part of the employee or from bad ventilation, and statistics show that lead poisoning heads the list.

Poison may be contracted by employees casting copper and zinc alloys, in the manufacture of rubber goods, in chemical work and many other processes; whilst poison from contact can be obtained from almost any trade, especially those associated with the use of lead in any of its forms. The first can be prevented by the removal of fumes from as near the place of origin as is practicable and the second only by the cleanliness of the employee.

Eye Strain.

We find also that over 75% of the workers have imperfect eyesight. This large percentage suffer from eye strain unless preventive measures are adopted. Perhaps many of these defects can be traced to bad illumination. Eye strain and over exertion can be overcome by light distribution, higher candle power per square foot evenly distributed and by the absence of glare and hard shadows.

Eye fatigue lowers the tone of the worker and results in reduced output, loss of time due to sickness and accidents.

Apart from the maintenance of the health standards of the employee, accident can best be guarded against by better lighting, the use only of tackle, tools *et cetera* that are in first class order, the proper guarding of machinery and suitable clothing of the worker.

Whilst it may be stated that the design of the lighting, ventilation system and sanitary blocks are matters for the engineer, the insisting upon them together with the cleanliness of the employee rests more with the medical officer.

Greater benefits will arise when the leaders of industry realize that it is to their interest to call in a medical officer to advise and encourage cleanliness amongst the employees and to watch for signs of fatigue and to trace its origin down to its basic cause, be it bad lighting or ventilation, drinking water or sanitation or unsuitable clothing. This medical advice and the protection of the employee is very important in hot and wet processes. It is better and cheaper to remove the cause than to patch up the employee after each failure.

To this end much good can, I believe, result from instructions given to workers by medical officers who have made a study of the individual processes of manufacture upon which the employees are engaged, and by showing them the dangers of neglect and the ease by which most industrial diseases may be prevented.

Electric Shock.

Perhaps in closing it may not be out of place to ask that with the growing use of electricity treatment after shock should be taught in all these cases and perhaps in our schools as well.

The exact effect of an electric shock is, it is understood, still obscure. An electric shock acts as a stimulant and has been so used by the medical profession for many years. Unfortunately chiefly owing to its comparatively low frequency the electric shock received in industrial undertakings, it is understood, overstimulates the system, causing a congestion, frequently fatal. Professor Crile, of Cleveland, Ohio, United States of America, has stated that prolonged electric stimulation of the nerve supply of all organs causes an increase in function, whilst an excessive stimulation causes a suspension of function.

Electric shock not only causes this stimulation or over-stimulation, but also a contraction of the muscles. The low voltage shock, about five hundred volts, is worse than that of higher voltages. The explanation of this perhaps lies in the nature of the shock and is the reason for stating that low voltage shocks are more dangerous than those of higher voltages. With high voltage shocks the muscular contraction appears to be so rapid that the victim is frequently hurled clear by the "invislbe kick" and owing to skin resistance less electricity enters the system than would be the case with prolonged contact.

With the low voltage shocks the victim appears to be unable to "let go"; the contraction of the stronger group of muscles overcoming the weaker. The result appears to be that this extreme muscular contraction, including that of the abdominal muscles, causes a large quantity of blood to be

driven into the heart, already overloaded by the nerve stimulation, not only flooding the heart but owing to these contractions the heart is unable to pump against the increased pressure and failure results. Perhaps, also, a gasification takes place not only in the blood, but also of the other moisture content within the body. Although electro-chemical action is well known, we should like to hear opinions as to whether this gasification takes places owing to the continuous application of electricity after heart failure or otherwise.

When, however, the victim has been freed with reasonable despatch, artificial respiration should be immediately resorted to and continued for not less than one hour. Cases have been cited in which recovery has taken place after that period of time and after the medical practitioner had declared the patient dead.

I might here state that men working near and about high voltage supply are usually skilled and much less in number than those who are liable to accidental contact with low voltage supply. Also, most skilled men have made themselves familiar with the methods of artificial respiration and whilst sending for a medical officer in cases of accidental contact immediately start work themselves on their fellow employee, frequently saving life.

With low voltage shock the risk is less with equal assistance at hand, providing contact has been for a short period only. Most fatalities, however, occur from shock when no one with knowledge of treatment is at hand and frequently thirty minutes or longer must pass before medical aid is available. This delay is dangerous and not only should our ambulance bearers be directed to apply artificial respiration immediately (even if they believe the victim to be dead), but artificial respiration should be taught and practised in all factories and schools. Fortunately it is very similar to first-aid in cases of drowning and combined would give the people protection without undue fear of electricity. The advent of wireless has made many into would-be electricians and most fatalities are due to unauthorized interference with installations or in cases of accidental contact by workers suffering from fatigue probably easily preventible.

Apart from fractures or torn flesh the bulk of industrial and domestic accidents are associated with burns and the elementary treatment of burns therefore is something which every child should be taught how to handle.

Conclusion.

Perhaps much information is lost to industry from absence of inquiries made concerning occupation and conditions under which the patient is daily employed. A collection of statistics from our public hospitals and medical practitioners, properly tabulated, may cause investigation along many new avenues and open up a new and better industrial condition. The results obtained in America and Europe indicate that our cities and factory sites must be laid out not only for utility, but with a view to better ventilation and lighting, and full use must be made of prevailing winds as well as of the contours of the land; air currents must be utilized to maximum advantage. Transport facilities between the centres of population and the outskirts should also be good.

We may tonight take a definite step towards the examination of our industrial conditions from these and other angles and so considerably reduce lost time and discomfort with proportional increase in prosperity and happiness to all. If, in addition to the collection of information from those who are ill, a physical survey of our industrial community could be made even in Brisbane by the two important bodies represented here tonight, a foundation may be laid for the greater future than can be now foretold.

Queensland at present leads Australia with its *Machinery Act*. This Act also deals with the clothing of employees in certain industries. This could well be extended throughout the Commonwealth; a uniform which will give increased health to the worker engaged in manufacture is surely of more importance to the community than those uniforms for transport workers, postal officers and motor car drivers *et cetera* which our governments and others now provide.

Today industries are heavily handicapped from lack of realizing that no concern founded on human activity can be economically or psychologically healthy, unless the workers are healthy. Healthy workers are the foundation of industrial success. Let us realize that it is the combined obligation of these two institutions to attend to this all-important industrial factor.

THE TREATMENT OF PELVIC ABSCESSES.

By HUGH C. TRUMBLE, M.C., M.B., B.S. (Melbourne), F.R.C.S. (England),
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SINCE reading H. L. Barnard's classical work "Contributions to Abdominal Surgery," I have invariably dealt with pelvic abscesses in conformity with the principles which he therein laid down. I have lately been led to believe that his methods are not generally practised and I write the following brief paper in order to direct attention to a procedure which is as simple as it is effective. For a fuller account the reader is referred to the above-mentioned work, a well-thumbed copy of which should adorn the shelves of all those engaged in the practice of medicine and surgery.

Abscesses situated within the true pelvis are of common occurrence. For convenience they may be divided into two groups. In the first of these the pus is formed as a result of disease of some organ in the immediate vicinity. Appendicitis and salpingitis are the most common causes, whilst less frequently the rectum, sigmoid colon or a Meckel's diverticulum may be to blame. Infection spreads directly from the affected viscus to the peritoneum. Pus is formed and is soon walled off by adhesions. The primarily diseased organ forms part of the abscess wall.

In the second group the cause of the abscess is not found in the pelvis. Either some extrapelvic trouble associated with peritonitis has left a residue of pus in the pelvis, or the offending organ, if originally intrapelvic, has been removed by the surgeon. The adoption of Fowler's position in the treatment of peritonitis favours the collection of exudates in the true pelvis and explains the relative frequency of the formation of residual abscesses in this region.

Anatomical Relations of the Abscess.

The pus lies in the recto-vesical or recto-uterine pouch of the peritoneum and as it accumulates thrusts the coils of small intestine upwards. These coils adhere to each other and to the walls of the pelvis and limit the abscess above. Anteriorly the collection abuts on the bladder or uterus, posteriorly it bulges into the hollow of the sacrum, flattening the rectum against that bone. The floor of the pelvis limits the abscess below.

Fate of the Abscess.

The pus may be gradually absorbed and a natural cure result. The peritoneum has great powers of recovery and in days gone by abscesses were sometimes observed to disappear. There is, however, no certainty that absorption will occur in any particular case and serious trouble may arise if the pus is not evacuated. The abscess may perforate a hollow viscus such as the rectum or bladder and again a natural cure is effected, although the cause of the abscess may remain to be treated. In less favourable cases the pus may burst through the protective adhesions limiting the collection above and infect the general peritoneal cavity. The reader is again referred to Barnard's work for a description of the various gutters along which infection tends to spread. It is the risk of this accident occurring which decides the surgeon to interfere rather than to wait for a natural cure.

Symptoms and Signs.

In the case of abscesses of the first group, as defined above, there is the history of the exciting cause, be it appendicitis, salpingitis or some other condition. If for any reason operation is delayed, there is no abatement of symptoms. The temperature remains above normal, malaise persists and the pulse continues at an increased rate. Sometimes there is increased frequency of micturition from pressure on the bladder, in other cases constipation from pressure on the rectum. On the other hand there may be a constant desire to defæcate and straining with the passage of mucus. The patient is usually not very ill, but is uncomfortable and generally miserable. In the case of abscesses of the second type there is frequently an interval after operation in which the patient appears to be doing well, the temperature and pulse rate falling to normal and so on. After a few days the above-mentioned symptoms reappear and the clinical picture resembles that described above. Often this interval is absent and there is no abatement of symptoms. The abdomen is almost always distended and more or less tympanitic. On palpation there may be an ill-defined tender mass rising from the pelvis, but when distension is gross, this may not be very evident. The perineum may be seen to bulge when pressure is made over the mass pushing it into the pelvis. The most definite evidence is obtained by a finger in the rectum. In a typical case there is a firm rounded mass filling up the hollow of the sacrum and situated immediately above the prostate in the male. It is tender and on bimanual examination is found to be continuous with the mass already discovered on abdominal examination. Fluctuation is often not easily detected as the pus is usually under tension and only the tip of one finger may be used to elicit the sign. There is no interval between the mass and the prostate, the finger as it passes up along the latter being abruptly stopped and diverted almost at right angles backwards into the hollow of the sacrum by the bulging wall of the abscess. Gentle pressure exerted by the tip of the finger on the mass is resisted and fails to effect any emptying, except when there is imperfect formation of adhesions to wall off the collection from the general peritoneal cavity.

Prevention of Abscess Formation.

In any case of appendicitis, salpingitis *et cetera*, if the offending organ is removed before the surrounding peritoneum is obviously inflamed, there is very little chance of abscess formation. When the peritoneum is irritated but not grossly infected, it pours out a copious secretion of sero-purulent fluid which is protective in its nature. The peritoneal surface still preserves its lustre. Should operation be undertaken at this stage, the diseased organ should be removed as gently as possible and the fluid should be pumped or pipetted off, great care being taken not to injure the peritoneum. Mopping with gauze should be avoided. Mr. Hamilton Russell has emphasized the importance of evacuating this defensive fluid whilst avoiding injury to the peritoneum. The wound is then closed and in the majority of cases what remains of the fluid is absorbed, with very little in the way of adhesions resulting to give evidence of former trouble. Nowadays drainage tubes to the pelvis are not used so frequently as formerly, it being recognized that the tube damages the peritoneum and converts the inoffensive protective fluid into frank pus, whilst adhesions invariably follow its use. When there is gross peritonitis, a drainage tube should be introduced to the bottom of the pelvis as the best means of avoiding the production of a residual abscess in this situation. Adhesions follow as a matter of course.

Choice of Cases for Rectal or Vaginal Drainage.

Only those abscesses which do not communicate with the general peritoneal cavity and which abut directly on the rectal or vaginal wall, are suitable for drainage by these routes. The examining finger in the rectum determines whether these conditions are present. The abscess should be felt as a firm, rounded, tender mass just inside the anus, bulging straight back from the prostate into the hollow of the sacrum. Should there be any doubt as to the fulfilment of these conditions, the rectal route should not be chosen.

Time to Operate.

As a rule a week or more elapses after the onset of the primary condition before the presence of the abscess is discovered. There need be no hurry to intervene, as it is important to allow sufficient time for the formation of firm adhesions. Probably the best interval is about ten to twelve days.

Treatment of Pelvic Abscesses.

When an abscess has formed either as a result of neglect on the part of the patient or in spite of all precautions, it is necessary to open and drain it. The opening may be made through the abdominal wall, through the ischio-rectal fossa and *levator ani* muscle of one side or through the wall of the rectum or vagina. Drainage through the rectum in males, through the vagina in females, has such great advantages that the other routes should be abandoned except in odd cases for particular reasons. The method is easy, practically free from danger and effective and the patient is out of bed in a week as a rule.

Technique.

General anæsthesia is to be preferred, but sacral anæsthesia is very effective. The patient is placed in the lithotomy position. The rectum is irrigated as for any rectal surgery. A large proctoscope is introduced and the anterior wall of the rectum is seen bulging into the hollow of the sacrum and covering the end of the instrument. This latter is thrust on gently until it is stopped by the said bulge. The mucous membrane is swabbed over with tincture of iodine and a long needle of moderate bore is plunged through the rectal wall in a direction corresponding roughly with the long axis of the patient. A syringe is fitted to the needle and suction is made, when pus will flow through the needle. The syringe is removed and a pair of sinus forceps with bluntly sharpened points is thrust through the rectal wall alongside the needle. The blades of the forceps are separated, making a tear in the wall about twelve millimetres (half an inch) long. There is a gush of pus and the operation is over. It is not necessary to introduce a tube, although there is no objection to so doing. If a tube is inserted it should have attached to it a long piece of string to prevent it slipping into the abscess cavity and it should be removed in twenty-four hours.

In the female, posterior colpotomy is performed in the usual way as an alternative method to that described above.

Dangers.

When pressure is made on the abscess by the needle or sinus forceps in piercing the rectal wall there is a slight chance that the abscess may rupture above and discharge pus into the general peritoneal cavity. I have never seen or heard of this accident. It might be thought that the needle would occasionally not enter the abscess cavity, but would pierce a coil of gut adherent to the rectum. In practice the pus is always found immediately the rectal wall is pierced, the coils of small gut apparently always being displaced upwards by the fluid. Bleeding is trivial as a rule. Indeed up to the present I have encountered no trouble of any gravity and the results have been most gratifying.

Results.

Although the patient does not as a rule feel very ill before operation, he is immensely relieved once the pus is evacuated. The temperature drops to normal in a few days and from then on there is no further trouble. The following figures serve to illustrate the usual after-course. In compiling them there has been no selection of patients, all those of whom records could be found being included. A few other cases of which records could not be traced, had similar after-histories.

The histories of six patients, five with appendicitis and one with perforated gastric ulcer, were available. In one only of the appendiceal cases had a pelvic drainage tube been used and it was removed on the second day. In two of the appendiceal cases the temperature fell to normal on the sixth day after the primary operation and rose again on the fourteenth day. In the remainder the temperature remained above normal. The abscesses were opened from the rectum in five patients, from the vagina in one. The period intervening between the operations was in one case ten days; in four fifteen days and in one nineteen days. The temperature fell to normal in three days in one case, in four days in three cases and in five days in one. Three patients were allowed out of bed in six days from the drainage operation, one in seven days and one in eleven days. None of these had any further trouble. In the patient with the perforated gastric ulcer the pelvic abscess was evacuated in the usual way by the rectal route on the fifteenth day. No tube was inserted and five days later a reaccumulation was discovered. With a finger in the rectum a sinus forceps was guided to the blocked track through which it was easily passed. No anæsthetic was required. Pus escaped and there was no further trouble.

Conclusion.

There is no question that drainage from the rectum or vagina is immensely superior to drainage through the abdominal wall. It is to be emphasized, however, that only those abscesses which are closed above and which abut directly on the rectum or vagina should be opened from below. The examining finger gives information on these important points.

GASTRIC CHLORIDES, THEIR ORIGIN AND SIGNIFICANCE.

By F. S. HANSMAN, M.B., Ch.M., M.R.C.P. (Lond.),
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AND
EMILY M. DAY, M.B., Ch.M.,
AND
R. CLIFTON, M.B., Ch.M., B.Sc.
(*From the Department of Biochemistry, Royal Prince Alfred Hospital.*)

THE estimation of total chlorides in gastric analysis by the fractional method has come to be

considered of great importance. By many the total chloride content of the test meal is considered to be a truer index of the ability of the gastric mucosa to produce free hydrochloric acid than is the estimation of the free and combined acidity by acidometric titration. High total chlorides have been considered to be a positive proof of the secretion of a large amount of free hydrochloric acid and the explanation of the absence of free acid in the presence of high total chlorides has been that neutralization has taken place by the regurgitation of the alkaline pancreatic juices (Boldyreff,[1] Bolton and Goodhart,[2] Bennett and Ryle,[3] Morrell Roberts[4]) or of mixed duodenal contents (Apperly,[5] Alvarez[6]).

We have found difficulty in interpreting the total chlorides along these lines. We do not by any means deny the occurrence of the duodenal reflux, but we feel convinced that the total chlorides cannot be explained solely by neutralization of the acid by the regurgitated alkaline juices. According to most authorities (Starling,[7] Halliburton[8]) the highest concentration of acid present in the pure gastric secretion as obtained undiluted by food or regurgitated fluids is not greater than 0·5% hydrochloric acid in man. The alkalinity of the pure pancreatic juice which is by far the strongest alkali of all the digestive juices, is given at a maximum of 0·65% sodium carbonate by Walter,[9] quoted by Boldyreff, or 0·76% sodium carbonate by Starling.[13] The alkalinity of the bile and the *succus entericus* is negligible. The sodium chloride content of the pancreatic juice is given by Bolton and Goodhart[2] at 0·2%. The maximum sodium chloride found by Taylor[10] in cases of human bile from the ducts was 0·1%. The percentage in gall-bladder bile was much less. Starting with these figures we have attempted to interpret the gastric total chloride findings in clinical cases. The following four curves showing the total chlorides and free acidity curves are taken, one from an article by W. Morrell Roberts[4] (see Chart I), the second from an article by Dr. C. Bolton and Dr. G. W. Goodhart[2] (see Chart II), the third from

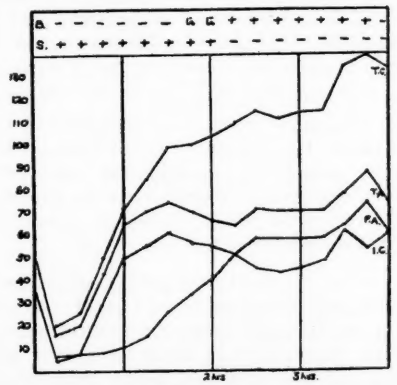

CHART I.

This chart shows total chloride and free acidity curves in a male patient, aged forty years. Diagnosis, Reflexed Dyspepsia from the appendix (after W. Morrell Roberts).

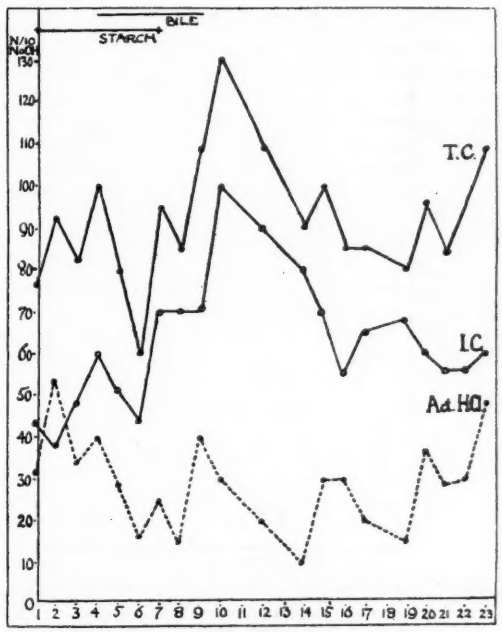

CHART II.

This chart shows total chloride and free acidity curves in a case of duodenal ulcer (after C. Bolton and G. W. Goodhart).

an article by F. A. Apperly (see Chart III) and the fourth from a case of our own (see Chart IV). This type of curve is often found, so it is not in any way exceptional. We have appended the protocols of four others. We have taken the results of Chart I

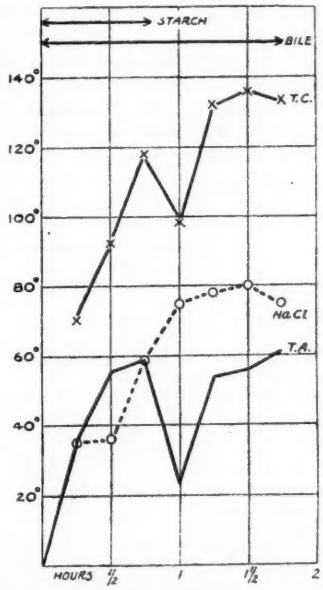

CHART III.

This chart shows total chloride and free acidity curves in a male patient, aged forty years, about a year after gastro-enterostomy for duodenal ulcer (after F. A. Apperly).

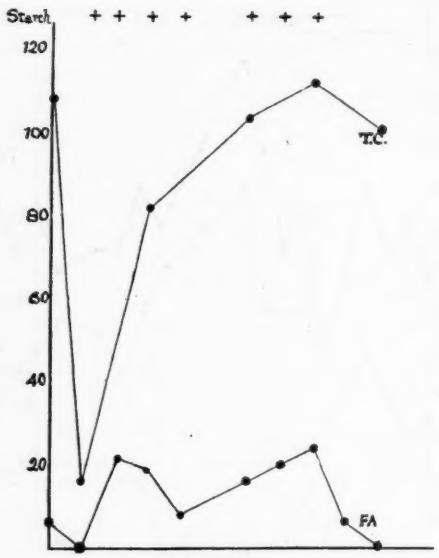

CHART IV.

This chart shows total chloride and free acidity curves in a male patient, aged forty-two years. The time interval in each instance was fifteen minutes. The patient suffered from dull pain in the epigastrium, relieved by vomiting. He was treated for one month with atropine and alkalis.

for a detailed analysis and indicated similar analyses in the other cases.

In this case at the end of three and a quarter hours we have a fluid in the stomach free of food (starch had been absent for more than one and three-quarter hours), with total chlorides equivalent to 140 cubic centimetres of tenth normal sodium chloride per hundred cubic centimetres and free hydrochloric acid equivalent to 75 cubic centimetres of tenth normal sodium chloride per hundred cubic centimetres. In order to simplify our argument we have expressed the normality in terms of gramme of chlorine *per centum*, so that in one hundred cubic centimetres of gastric contents we have:

Total chlorides of gastric juice	≡ 140 cubic centimetres of $^{n}/_{10}$ NaCl.
	≡ 0·819 gramme of sodium chloride.
	≡ 0·497 gramme of chlorine.
In this the free acid ..	≡ 0·438 gramme of sodium chloride.
	≡ 0·266 gramme of chlorine.
Neutral chlorides (total chlorides less free acid chlorides)	≡ 0·381 gramme of sodium chloride.
	≡ 0·231 gramme of chlorine.
Similarly expressed, one hundred cubic centimetres of pure gastric juice of maximal strength (0·5% HCl) ..	≡ 0·486 gramme of chlorine.

We shall assume that the stomach from which the graph was obtained, was able to secrete acid of this maximal concentration. In one hundred cubic centimetres of the contents present at the end of three and three-quarter hours, we have 0·266 gramme of chlorine present as the free acid. We have just seen that 0·486 gramme of chlorine require the secretion of one hundred cubic centimetres water to produce a juice of maximal strength, so that 0·266 gramme of chlorine would require $\frac{0{\cdot}266 \times 100}{0{\cdot}486}$ cubic centimetres, that is, 54·75 cubic centimetres to produce a juice of maximal strength. The neutral chlorides present must therefore be in the remaining 45·25 cubic centimetres of gastric contents, that is, we have 45·25 cubic centimetres containing 0·231 gramme of chlorine.

Thus the stomach contents can be divided into two distinct parts: An acid part of 54·75 cubic centimetres containing all the free chlorine and a neutral part of 45·25 cubic centimetres containing all the combined chlorine.

Let us consider the neutral part. The hydrochloric acid initially present in it has been neutralized by a reflux of alkaline juices and according to the usual conception, the hydrochloric acid initially present accounts for the whole of the chlorine except for a small amount of neutral chloride present in the regurgitating fluid. Furthermore, pure gastric juice and regurgitated fluid account for the whole of this neutral part (food being absent). Assuming that the regurgitated fluid was pure pancreatic juice, which is by far the most alkaline fluid available for neutralization, and assuming the alkalinity of this juice to be equivalent to the acidity of pure gastric juice, then our 45·25 cubic centimetres of neutral solution are made up of equal parts of pure gastric juice and pure pancreatic juice. That is, we have 22·625 cubic centimetres of each. Now one hundred cubic centimetres of pure pancreatic juice contains 0·2 gramme of sodium chloride or 0·121 gramme of chlorine. Therefore 22·625 cubic centimetres of pure pancreatic juice contains $\frac{22{\cdot}625 \times 0{\cdot}121}{100}$ gramme = 0·0274 gramme of chlorine. But the mixture of gastric and pancreatic juices under consideration contained 0·231 gramme of chlorine. Therefore the 22·625 cubic centimetres of gastric juice in it contained 0·231 – 0·0274 = 0·2036 gramme of chlorine. And one hundred cubic centimetres of such a gastric juice would contain $\frac{0{\cdot}2036 \times 100}{22{\cdot}625}$ = 0·9 gramme of chlorine. In other words the normality of this juice would be ≡ 0·9 gramme of chlorine. But the maximum possible normality for man is ≡ 0·486 gramme of chlorine. Therefore with the regurgitation of pancreatic juices alone we cannot account for the total neutral chlorides.

Next let us return to our 45·25 cubic centimetres of neutral gastric contents in Case I (see Chart I) and suppose that the regurgitated fluid was not pure pancreatic juice, but a fluid composed of *succus entericus* and bile and pancreatic juice. Apperly[11] favours this view and shows that a fluid containing "considerable chlorides" may regurgitate, but in presenting his data he expresses the total ion

ANALYSES OF OTHER CASES.

Patient.	Point of Curve Taken for Analysis.	Total Chlorides.		Free Hydrochloric Acid.		Neutral Chlorides.		Cubic Centimetres out of 100 Required for Free Hydrochloric Acid as Pure Gastric Juice (0·5% Hydrochloric Acid).	Cubic Centimetres out of 100 Left for Neutral Chlorides.	Grammes Chlorine in Reflux Pancreatic Juice (0·121 Gramme Chlorine %).	Grammes Chlorine in Neutralized Gastric Juice by Difference.	Original Normality in Terms of Grammes Chlorine % of "Neutralized Gastric Juice."
		Cubic Centimetres $\frac{n}{10}$ NaOH per 100 Cubic Centimetres.	As Grammes Chlorine per 100 Cubic Centimetres.	As Cubic Centimetres $\frac{n}{10}$ NaOH per 100 Cubic Centimetres.	As Grammes Chlorine per 100 Cubic Centimetres.	As Cubic Centimetres $\frac{n}{10}$ NaOH per 100 Cubic Centimetres.	As Grammes Chlorine per 100 Cubic Centimetres.					
Bolton and Goodhart's Case (Chart II) ..	At 2½ hours	130	0·4615	30	0·1065	100	0·355	22·33	77·67	0·047	0·308	0·793
Apperly's Case (Chart III) ..	At 1½ hours	135	0·4793	48*	0·1704	87	0·3089	35·06	64·94	0·0393	0·2694	0·83
McL. (Chart IV)	At 2 hours	112	0·3976	24	0·0852	88	0·3124	17·53	82·47	0·0499	0·2625	0·64
Bailey	At 2½ hours	120	0·426	4	0·0149	116	0·4111	3·09	96·91	0·059	0·352	0·726
McG.	At 2½ hours	112	0·3976	18	0·0639	94	0·3337	13·15	86·85	0·0526	0·2811	0·646
A.R.B.	At 3 hours											
	20 minutes	113	0·401	70	0·2485	43	0·1527	51·13	48·87	0·0296	0·1231	0·504
McK.	Appetite Juice	121	0·4296	48	0·1704	73	0·2591	35·06	64·94	0·0393	0·2198	0·677

* Total acidity.

content as "chloride strength" and does not give the actual chloride figure *per se*. In fact, we can find no data for the chloride content of pure bile or *succus entericus* in the literature at our disposal. However, the total inorganic salt content of bile and *succus entericus* is stated by Starling[12] to be 0·8%, chiefly made up of sodium carbonate and sodium chloride. Let us assume that the whole of the salts is sodium chloride, then the chlorine content of mixed bile and *succus entericus* would be ≡ 0·485 gramme of chlorine per one hundred cubic centimetres. Now if the fluid that regurgitated was to contain 0·485 gramme of chlorine per one hundred cubic centimetres, it could not be very alkaline, as its content of pancreatic juice would be small (pancreatic juice contains only 0·121 gramme of chlorine per one hundred cubic centimetres). But let us assume that the regurgitated fluid was as alkaline as pure pancreatic juice and contained 0·485 gramme of chlorine per one hundred cubic centimetres; we shall then have in the neutral part of the gastric juice two components as before: (i) Pure gastric juice, (ii) regurgitated mixed duodenal juice. Let us suppose as before that equal parts of each are present, that is 22·625 cubic centimetres of each. Now 22·625 cubic centimetres of regurgitated duodenal juice contain $\frac{22{\cdot}625 \times 0{\cdot}485}{100}$ grammes, = 0·110 gramme chlorine. This leaves the 22·625 cubic centimetres of gastric juice to contain 0·231 – 0·1100 gramme, = 0·121 gramme of chlorine. Therefore one hundred cubic centimetres of such a juice would have ≡ 0·535 gramme of chlorine per hundred cubic centimetres. This is again of greater normality than the possible maximum.

In this case we have made the most extreme allowances and yet we are unable by the theory of regurgitation to account for all the total chlorides present in the stomach. Not even the most ardent supporter of the reflux theory would consider the mixed regurgitating fluid could possibly have an alkalinity equal to pure pancreatic juice and contain at the same time a neutral chloride content of 0·8%, yet supplied with a more efficient neutralizing agent than they themselves assume, we cannot account for all the chlorides present in the stomach.

And if it is difficult to explain the amount of total chlorides in gastric contents on the assumption of regurgitated pancreatic juices or duodenal juices when free acid is known to have been secreted, it is more difficult in cases of achlorhydria. At most we can assume the alkalinity of the regurgitated fluid to equal the acidity of the gastric contents, so that to neutralize them an equal amount of fluid to that originally present in the stomach must regurgitate; that is to say, the normality of chloride estimated is only approximately half that at which the gastric juice was originally secreted. So that in Chart V in which the titrated figure of total chlorides reached the equivalent of 80 cubic centimetres of tenth normal sodium hydrate per hundred cubic centimetres, the original acidity must have been the equivalent to approximately 160 cubic

centimetres of tenth normal sodium hydrate per hundred cubic centimetres, or in Chart VI, in which the total chlorides at the end of two hours equalled 103 cubic centimetres of tenth normal sodium hydrate per hundred cubic centimetres, the gastric juice as secreted must have been approximately 206 cubic centimetres of tenth normal sodium hydrate per hundred cubic centimetres. To assume the total chloride figure as resulting from a neutralized gastric juice becomes impossible.

Working on the hypothesis of pure gastric juice neutralized by pure pancreatic juice a chart could be made showing the maximum amount of chlorine that could be accounted for by hydrochloric acid.

For example when the amount of free hydrochloric acid in the stomach is maximal, there would be in one hundred cubic centimetres of its contents:

100 cubic centimetres of 0·5% HCl = 0·486 gramme Cl = 137 cubic centimetres $^{n}/_{10}$ NaOH.

When there was no free hydrochloric acid in the stomach there would be in 100 cubic centimetres of its contents 50 cubic centimetres of pancreatic juice: 50 cubic centimetres of 0·5% HCl = 0·243 gramme Cl = 68·5 cubic centimetres $^{n}/_{10}$ NaOH. And for all combinations of gastric and pancreatic juices between these extremes there would be a maximal possible of chlorine that could be accounted for by the secretion of hydrochloric acid.

We have prepared such a chart graphically and analysed ninety of our patients (unselected except that we have omitted the pernicious anæmias) and find that fifty-six have greater amounts of chlorides than can be accounted for, as coming from the hydrochloric acid of the stomach plus that in the regurgitating pancreatic fluid.

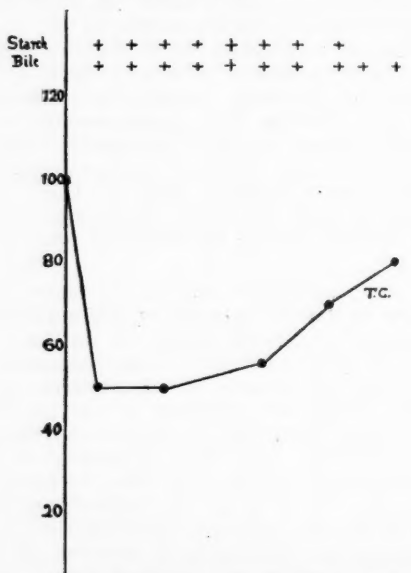

CHART V.
This chart shows total chloride curve. There was no free acid present. The time interval was fifteen minutes.

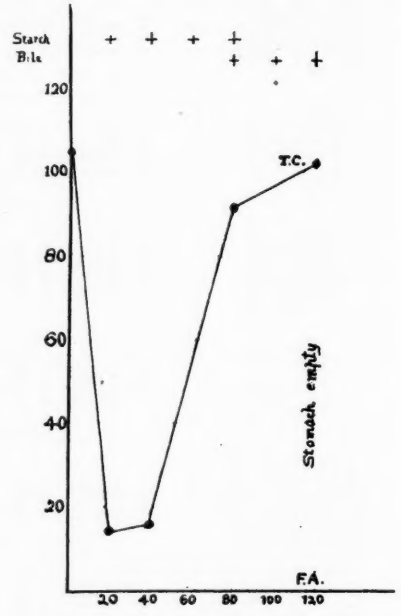

CHART VI.
This chart shows total chloride curve in a male patient who suffered from rheumatoid arthritis.

One therefore must assume another source for the chlorides in the gastric contents and it seems to us that the stomach itself provides their origin. If this is so, the interpretation of gastric analyses becomes much simplified and while the reflux of various juices through the pylorus takes place, probably neutralizing the gastric contents, chlorides

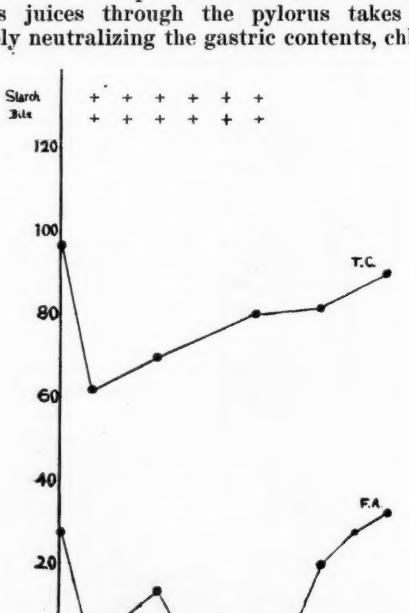

CHART VII.
This chart shows total chloride and free acidity curves.

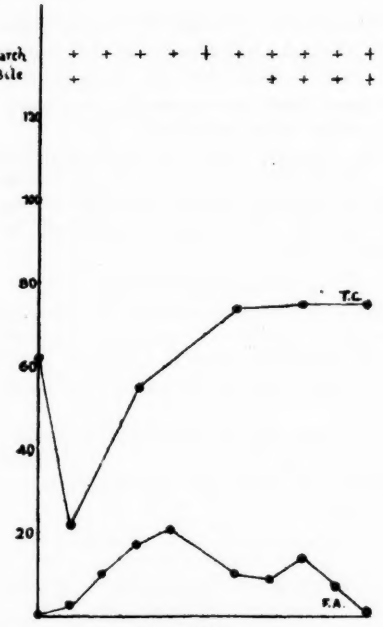

CHART VIII.

This chart shows total chloride and free acidity curves in a patient who suffered from severe pain one to two hours after food for five years. The time interval was fifteen minutes. The pain was relieved by food. Sometimes the patient complained of nausea and vomited clear fluid. X ray examination revealed no abnormality.

are added from the gastric mucosa. We suggest that the stomach is continually trying to establish a fixed amount of neutral chloride in its contents and that during digestion the secretion of hydrochloric acid is antagonistic to its attempts; in other words, when the demand for hydrochloric acid is present, it is secreted from the available blood chlorides at the expense of the neutral chlorides which are also wanted in the stomach to bring up the chloride content of the fluids taken in the meal and thus the difference between the free acidity and the total chlorides in the stomach is decreased, as there is not enough chloride present in the blood to meet both demands. When the demand for hydrochloric acid has passed, chlorides are once more available to pass into the stomach in a neutral state and the difference between the free acid and the total chlorides increases. This is admirably shown in Chart VII and in Chart IV.

For example in Chart VII the difference between the free acidity and total chlorides in terms of tenth normal sodium hydrate is:

Period.	Free Acidity.	Total Chlorides.	Difference.
Fasting Juice	29	97	78
At ¾ of an hour at height of secretion of acid	15	69	54
At 1¾ hours at a resting stage in digestion	0	80	80
At 2¾ hours when acid is again being secreted	32	90	58

In Chart IV similarly:

Period.	Free Acidity.	Total Chlorides.	Difference.
Fasting Juice	6	108	102
At 2 hours, highest acidity	39	112	73
At 2¾ hours when stomach was empty	0	100	100

In cases in which the acidity is low, the chlorides rapidly tend to attain a constant figure somewhere in the neighbourhood of that existing in the fasting juice, as in Charts VIII and IX.

An interesting observation was made from a case in which, when the fasting contents had been removed, appetite juice was stimulated by discussing what the patient would like for his breakfast. About fifteen cubic centimetres of this juice was obtained.

In the fasting juice there was:

Free hydrochloric acid .. 25 cubic centimetres $^{n}/_{10}$ NaOH
Total chlorides .. .. .. 103 cubic centimetres $^{n}/_{10}$ NaOH
Difference .. .. 78 cubic centimetres $^{n}/_{10}$ NaOH

In the "appetite juice":

Free hydrochloric acid .. 13 cubic centimetres $^{n}/_{10}$ NaOH
Total chlorides .. .. .. 82 cubic centimetres $^{n}/_{10}$ NaOH
Difference .. .. 69 cubic centimetres $^{n}/_{10}$ NaOH

In this it is extremely unlikely that anything regurgitated from the duodenum; there was no bile present and a very short time elapsed, yet the total chlorides are quite high. It is suggestive that the total chlorides in this appetite juice is very nearly equal to the difference between the free hydrochloric acid and total chlorides in the fasting juice.

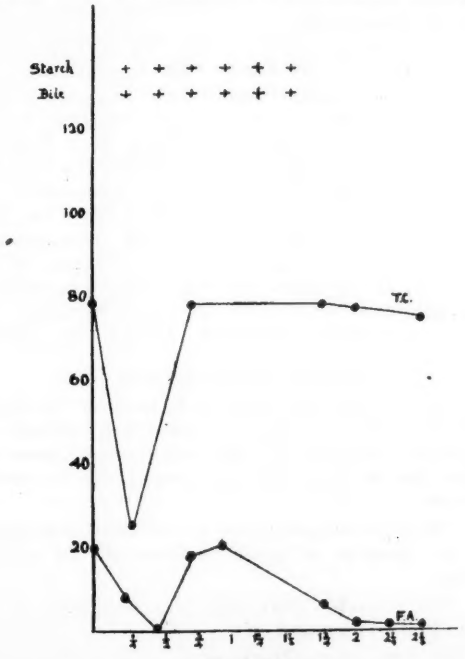

CHART IX.

This chart shows total chloride and free acidity curves in a male patient who had received atropine and acid therapy.

In another person, H.T. (a laboratory assistant who volunteered for the experiment), appetite juice was obtained after the stomach had been thoroughly emptied, by frying bacon and eggs in the same room. We obtained a fluid within a few minutes containing:

Free hydrochloric acid .. .. ≡ 10 c.cm. $^{n}/_{10}$ sodium hydrate
Total chlorides .. .. .. ≡ 98 c.cm. $^{n}/_{10}$ sodium hydrate

There was no bile.

We tested for the presence of trypsin by carefully following W. H. Spencer's method.[14] The casein was prepared following the directions of Hawk.[15] The portion of the appetite juice taken for this test was adjusted to pH 8·4 within five minutes of aspiration, the British Drug House's universal indicator being used as an external indicator. We found a definite amount of casein present in all the tubes after four hours' incubation at 37° C.

In this case, therefore, there could have been only a very small amount of pancreatic juice in the stomach. It is very hard not to come to the conclusion that neutral chlorides passed through the stomach wall as such.

We can now explain the difference between the amounts of total chlorides found in achlorhydrias of different origin, such as the high total chlorides in the achlorhydrias associated with some cases of arthritis and the low total chlorides in pernicious anæmia. In the former the gastric mucosa may be healthy, in pernicious anæmia it is the seat of inflammatory changes as instanced by the almost universal presence of numerous pus cells, occult blood and enormous numbers of organisms in the fasting residue in these cases.

We have brought forward this explanation of the gastric chlorides tentatively. We intend to try to interpret our findings along these lines and wish other workers interested in gastric analysis to see if this explanation does not satisfy their findings better than the assumption of regurgitation alone.

We appreciate that Apperly's conception of gastric digestion is very closely allied to the one just propounded, but there is a very fundamental difference between them as regards the source of the chlorides. He assumes the reflux juices capable of explaining the facts, but our theory demands the passage of neutral chlorides through the gastric mucosa.

Summary and Conclusions.

1. An attempt has been made to show by simple calculation that reflux of duodenal, biliary or pancreatic secretion in any combination does not account for the high chloride figure found in gastric analyses.

2. We have suggested as an alternative explanation the passage of chlorides through the gastric mucosa.

3. We consider that the total chlorides of the stomach are composed of:

(*a*) Free hydrochloric acid.
(*b*) Neutralized hydrochloric acid.
(*c*) Neutral chlorides which have regurgitated.

We regard (*a*), (*b*) and (*c*) as contributory.

(*d*) Neutral chlorides from the stomach which pass through the gastric mucosa as such.

We regard these as controlling the level to which chlorides rise in the stomach.

4. We consider that the estimation of hydrochloric acid in the stomach is of greater importance than the estimation of total chlorides as an index of the ability of the gastric mucosa to secrete hydrochloric acid.

Acknowledgements.

We wish to thank Professor H. Chapman of the Physiology Department, Sydney University, and Dr. A. H. Tebbutt, D.S.O., Director of Pathology, Royal Prince Alfred Hospital, for most helpful criticism.

We hope that the authors whose graphs we have made use of, will pardon us not asking their permission, but time and space did not permit us to ask them.

PROTOCOLS FOR CASES ANALYSED IN TABLES, FOR WHICH NO GRAPH IS GIVEN.

McL., ætatis 59.—Pulmonary Tuberculosis. Vomiting and Pain After Food.

	Free Acid.	Total Chlorine.	Starch.	Bile.
Fasting Juice ..	—	121	—	+
15 minutes	—	30	+	—
30 ,,	27	—	+	—
45 ,,	48	86	+	—
60 ,,	50	—	+	—
75 ,,	55	106	+	—
90 ,,	48	—	+	+
105 ,,	—	—	+	+
120 ,,	41	108	+	+
135 ,,	27	—	+	+
150 ,,	17	112	+	+

A.R.B.—Chronic Dyspepsia.

	Free Acid.	Total Chlorine.	Starch.	Bile.
Fasting Juice ..	24	108	—	—
20 minutes	9	35	+	—
40 ,,	30	77	+	—
60 ,,	29	—	+	—
80 ,,	56	98	+	—
100 ,,	77	—	+	—
120 ,,	39	89	+	—
140 ,,	44	—	—	—
160 ,,	63	110	—	Tr.
180 ,,	62	110	—	+
200 ,,	70	113	—	—

McK.—Rheumatoid Arthritis.

	Free Acid.	Total Chlorine.	Starch.	Bile.
Fasting Juice ..	10	113	—	+++
Appetite Juice ..	48	121	—	++
20 minutes	12	37	+	Tr.
40 ,,	21	—	+	Tr.
60 ,,	28	65	+	+
80 ,,	29	74	+	++
100 ,,	19	82	+	++
120 ,,	24	94	+	++
140 ,,	20	96	+	++

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(13) E. H. Starling: "Principles of Human Physiology," Fourth Edition, page 606.
(14) Hawk: "Practical Physiological Chemistry, Eighth Edition, page 172.
(15) Hawk: "Practical Physiological Chemistry," Eighth Edition, page 347.

THE OPERATION FOR ACUTE MASTOIDITIS AND ITS AFTER TREATMENT.[1]

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I INTEND to deal tonight only with the technique of the acute mastoid operation and its after treatment.

From time to time I have heard opinions expressed by aurists on the proper way to do acute mastoid operations, some of which have been so much at variance with what I deemed to be the recognized views on the subject, that I determined to bring up the question before the Section for discussion.

I remember hearing an aurist say some years ago that one "should not do too much in acute mastoid operations for fear of spreading the infection."

Another opinion I heard more recently was to the effect that in only very few cases was it necessary to open the cells at the tip of the mastoid.

I remember reading in the *Journal of Laryngology* some time ago an article by an English aurist who stated that in certain fulminating cases it was not advisable to do a complete exenteration of cells on account of the danger of spreading the infection to healthy areas and internal parts, sinus, meninges *et cetera*.

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on December 8, 1926.

Now for a good many years I have followed the method, with certain modifications, taught at the Manhattan Hospital, New York. This aims at the complete exenteration of cells in every operation.

I have never seen anything but good result from such radical procedures, provided, of course, that the operation is undertaken at the right time in the course of the disease, that is not earlier than forty-eight to seventy-two hours from the onset of the mastoiditis. On the contrary I have seen several cases in which secondary operations have had to be performed to remove infected cells missed at the first operation. When cells are incompletely removed, there results considerable suppuration before resolution takes place.

Description of Operation as Taught at Manhattan.

The operation as taught at Manhattan applies to the cellular type of mastoiditis. An incision is made about six millimetres (a quarter of an inch) behind the auricle, except at the mastoid tip where it is twelve millimetres (half an inch) down to the bone. This is the usual technique carried out to expose the bone area. The tip is carefully cleared of fibres of the sterno-mastoid. A gutter is made by a medium sized gouge immediately behind the edge of the posterior wall of the bony meatus, the gutter starts from just above the junction of the superior and posterior walls and extends to the tip. This is deepened until the cell spaces are revealed. Deepening is done with Spratt's curette and care is taken not to dig, but just to scrape from the tip upwards. With a rongeur pieces are then bitten out, the operator starting from the tip and working upwards; bigger bites are taken below and smaller ones above where the sinus is nearer the surface. The antrum is then exposed in the following manner. A Spratt curette is held near its head with the finger and thumb of the left hand while the head is made to move by the other hand grasping the handle so that the edge is almost parallel to the surface to be reamed out. This avoids digging and the possibility of suddenly entering the sinus or brain. The head moves in a semicircle up the posterior part of the exposed cavity then across the summit and down the anterior surface along the posterior bony wall of the meatus. The cells are rapidly reamed out in this way and the antrum is uncapped. The gouge of course can produce this result by scraping movement from below upwards in the direction of the antrum.

The operator now turns his attention to the tip and reams out the cells in a similar manner and when overhang developes, bites it off with a rongeur. The process is carried out until the inner table is reached. The Manhatton School advocates biting away the whole tip with a rongeur. The operator now works upwards, reaming away the cells either with Spratt's or Richard's curette from the sinus wall until the bluey-white inner table is seen and the curve of the sinus rounding in the wound takes shape. Cells having been cleared away all round, the sinus in front and behind the antrum is cleared and cells of the tegmen are cleared away down to

the inner table. As much overhang as possible is removed, so that the walls of the antrum are perpendicular. The cells of the posterior bony wall of the meatus are cleared right away with the curette. At the upper part of this wall will be found the external semicircular canal which is the inner and lower boundary of the antrum. Cells are followed into the root of the zygoma and removed until they appear healthy. When exenteration is completed the posterior wall of the bony meatus is taken down a little with a rongeur. The cavity is then gone over and any irregularities are smoothed down so as to make a good clean cavity.

Modifications.

Personally I explore the antrum first in the usual way, gradually enlarging the area in the cortex to obtain room. If the antrum does not show up soon, I make the groove as above described and proceed to clear the tip and work from below upward. I do not bite off the tip, but remove the whole of the outer wall. The infected cells must be followed where they lead.

As a rule I do not follow the cells in the tegmen right down to the inner table, unless they are infected, but ream them away until they appear healthy. I try in every case to see the external semicircular canal. When necessary owing to extensive infection of the cells, I make the incision at right angles to the primary incision, backwards.

To some this operation may seem too radical, but I have found over and over again infected cells in areas that appeared clean, so that it is undoubtedly safer to remove all cells.

Of course the routine has to be modified to suit individual cases. Where sinus infection is found, this should be the starting point for the exenteration.

I believe it is bad practice to remove large areas of cortex without at the same time removing the underlying cells. If this is not done, some sequestra may form at a later date.

The description applies to cellular and pneumatic mastoids. In the compact type the surgeon is forced to use the gouge and hammer. Authorities state that the concussion of the hammer is bad for the patient's brain and that it is better to use the curette and gouge forceps as much as possible. I am in agreement with this opinion.

Treatment of the Wound.

After tying off any vessels that appear to require it, I pour out of a large jug a large quantity of hot saline solution into the wound, getting rid of all *débris*, clots and bits of bone. The cavity is then dried and filled with iodoform gauze—the end being first put into the antrum. If the surgeon finds it necessary to follow infected cells into the zygoma root, one stitch may be used at the upper end of the wound. Otherwise I use no stitches at all. I see to it that the iodoform gauze is tucked in all round at the edges of the wound. It is the iodoform gauze lying on the skin that gives rise to eczema. The meatus is now cleaned out thoroughly with strips of gauze and packed evenly and snugly from the tympanic membrane to the exterior with plain narrow gauze (twelve millimetres or half an inch single or six millimetres or a quarter of an inch double thickness). I assume that the tympanic membrane is perforated or opened artificially.

After Treatment.

Outer dressings are removed the next day when I also remove the gauze from the meatus and repack.

In the after treatment I rely on the capillary attraction of the dry gauze in the meatus and mastoid wound rapidly removing all pus and moisture from the middle ear cavity and leaving it in a dry condition which is inimical to the growth of micro-organisms and which favours a rapid return to normal.

This favourable result will not accrue, if infected cells are left which set up suppuration in the mastoid cavity and keep up trouble in the middle ear.

Treatment of the Meatus.

I use plain gauze narrow enough to be easily packed into the meatus with fine aural forceps. The gauze is taken out, the meatus cleaned and repacked twice a day for the first few days. No syringing whatever is allowed. This packing is continued until all discharge has ceased.

When the gauze is absolutely dry for four days running, packing can be abandoned. The middle ear is usually dry in from seven to fourteen days.

Mastoid Wound Treatment.

The iodoform gauze is left for two days then taken and repacked and as I said before, no gauze is allowed to project on to the skin. When the gauze is first removed, the cavity should be quite clean without any pus showing at all. Gauze is left for two days and so on for the first week. About the seventh or eighth day points of granulations appear and with them a certain amount of discharge. With this change in the appearance of the wound I now pack loosely every day, using iodoform gauze of at least 2·5 centimetres (one inch) or 3·75 centimetres (one and a half inches) in width and three to four layers thick. The wider gauze is for the big cavities. If there is any discharge, I soak it away with a light pack of plain gauze before repacking with the iodoform gauze.

Now, the width of the gauze is important. If narrow stuff is used (tape) far too much is packed into the cavity and this retards the growth of granulations. The thick wide gauze is elastic and a small amount loosely fills the cavity and permits the granulations to go on forming.

I take pains to see that the gauze separates the whole extent of the edges of the wound and the gauze is not allowed to get out to the skin, but is tucked in neatly round the edges to avoid iodoform eczema.

On account of the irritating effect of the iodoform on children I find that I have to use bismuth gauze. I prefer the yellow gauze as sold by the makers, not the hospital made stuff, as the latter contains too

much bismuth. I use it in exactly the same way as I do the iodoform gauze.

The edges of the skin being prevented from adhering together at the ends, the whole wound is kept open and remains so until the cavity is quite filled with granulations when there is left a healthy sore which heals up with a little boracic ointment about the second week. I uses "Scarlet red" ointment every second day smeared gently over the wound to stimulate the granulations.

In hospital cases I find that the nurses and resident medical officers try to get as much gauze as possible into the wound and if this is allowed to go on, the surface gets glazed, granulations cease to form and eventually the skin grows in and an unsightly cavity is left.

If ends are allowed to close up, then a sinus results which is very hard to cure.

Carried out in the above manner neither syringing nor drops are necessary through the whole course of the after treatment.

Other Methods.

I do not like bismuth-iodoform-paraffin-paste as the drainage which I believe is necessary for the best results, does not occur.

I have used the blood clot method in only two patients whose condition was not purulent and hence should not be counted as acute mastoiditis. They both healed by first intention. I think the method is illogical and prefer the one I have described. I am aware, however, that some men have obtained good results from it.

After the ear is dry secondary closure could be done fourteen days after the operation. Under anæsthesia granulations could be freshened and when the cavity filled with blood, skin and periosteum could be stitched across and the cavity closed. I intend to try this in the next suitable case.

Length of Time for Healing.

The average length of time for healing to take place is from four to six weeks.

Conclusions.

The points to be noted in the method advocated are:

1. Early cessation of discharge from the meatus.
2. The clean mastoid wound.
3. Easy dressing.
4. Quick recovery.

Reports of Cases.

TWO CASES OF COMPLETE LARYNGECTOMY AND A SIMPLE BUT EFFECTIVE ARTIFICIAL LARYNX.[1]

By R. GRAHAM BROWN,
Brisbane.

I WISH to show the following patients because they are of more than passing interest.

[1] Read at a meeting of the Queensland Branch of the British Medical Association on September 3, 1926.

Case I.

The first is a woman, now aged fifty-nine years, upon whom I performed a complete laryngectomy at the General Hospital over six years ago. At the same time I wish to draw attention to the speech apparatus which she is wearing.

The details of this case and of the artificial larynx were communicated by me to the Section of Laryngology, Royal Society of Medicine, London, on June 5, 1925.[(1)]

The escape of saliva round the pharyngeal opening of an artificial larynx is very difficult to control and the discomfort to the patient consequently is so great that most surgeons find the benefits of using an artificial larynx so outweighed by this inconvenience, that they very soon discard the use of such an aid and close up the pharyngeal opening, much to the satisfaction of the patient.

The apparatus which I demonstrate tonight, is the one which was shown by me at the above-mentioned sectional meeting of the Royal Society of Medicine. It will appeal to you, I trust, as regards its simplicity and more particularly its efficiency.

This patient had an extensive intrinsic cancer of the larynx. Fourteen days after the complete laryngectomy was performed, the wound was completely closed. I showed her after operation at the Australasian Medical Congress in Brisbane in August, 1920.

During November, 1923, I attempted to fashion an artificial larynx by means of a "tube" flap. A very good voice resulted, but there was a considerable escape of saliva, so much so, that I was forced to discard the method and had to resort to blocking the pharyngeal opening by means of a vulcanite cone. I tried several models of artificial larynges, but all showed the same inconvenience, namely, troublesome escape of saliva. The "tube" eventually became dilated owing to the upward pressure exerted to control the opening.

I then tried the smallest sized Heath's oval aural speculum, four millimetres by two and a half millimetres in diameter at the apex (Heath's speculum is long and narrow in its meatal part). By fixing tapes to the base of the speculum and tying them over the vertex, I found that not only was the saliva controlled around the pharyngeal opening, but that there was no escape through the speculum itself (see Figure I).

I then fixed into the wide opening of the speculum a violin pitch-pipe ("D" or "G") by means of a small piece of rubber tubing. Later this tubing was replaced by a small band of metal of convenient size. These pitch-pipes are to be obtained in a music shop for a few pence each. I then had made for me a thin shield of pink vulcanite, fitting closely at the front of the neck except at its superior border. Here a small space was purposely left between it and the neck. Tapes passed through small rings on the sides of the shield and tied round the neck, held it in

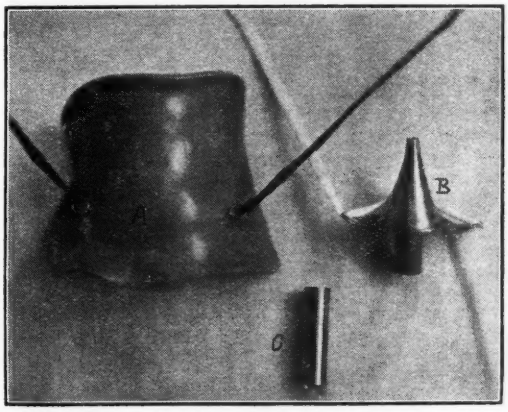

FIGURE I.
Showing Apparatus of the Artificial Larynx. A = Neck Shield of pink vulcanite. C = Pitch Pipe (violin "D" or "G"). B = Pharyngeal portion showing pitch pipe in position.

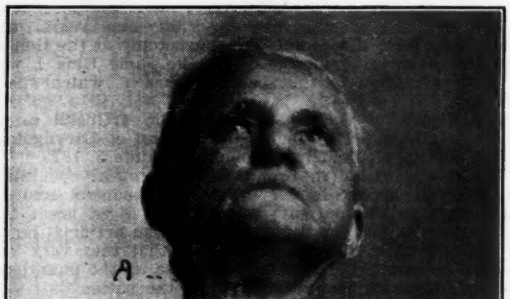

FIGURE II.

Showing Result of Complete Laryngectomy Operation, August, 1920, and Pharyngeal opening made in November, 1923. A = Pharyngeal opening. B = Tracheal opening.

position. Through the small space at the superior border breathing takes place without hindrance. When the patient desires to speak, she simply brings her head forward slightly, producing, as can be seen, an airtight space between the neck and the shield. The airway then is *viâ* the pitch-pipe (see Figures II to V).

This patient uses the apparatus with absolute comfort between meals and can even wear the instrument the whole day, without any obvious blocking or escape of saliva. It is taken out, however, and replaced by a solid cone during meal hours. I found that the small opening in the Heath aural speculum interfered somewhat with the strength of the voice; therefore I selected a speculum of a slightly larger calibre, such as is shown in the later model. I have also added laterally flanges and I have had the large end of the speculum slightly moulded to fit the

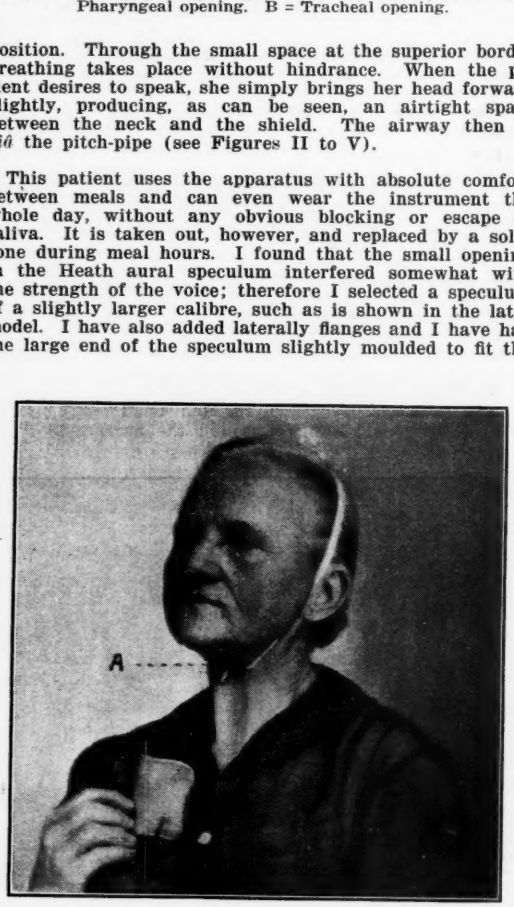

FIGURE III.

Showing Pharyngeal Part of Apparatus in Position.

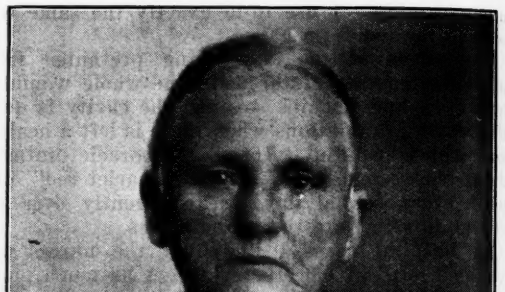

FIGURE IV.

Showing "A," Chink through which Respiration Takes Place when Neck Shield is in Ordinary Position.

pharyngeal opening. I am indebted for the manufacture of this instrument to a dentist friend. The patient using this instrument has an excellent voice which can be heard easily beyond a room of more than ordinary size. The speech, however, is in a monotone.

The following are points which I should like to emphasize: (i) The simplicity and cheapness of the apparatus, (ii) the almost total absence of the escape of saliva for long periods, (iii) a voice of good strength.

I suggest that the apparatus is worthy of trial, whereas other instruments which I have knowledge of, can be worn only for so short a period that their use is soon discarded by patients. I found that the narrower the opening at the end of the speculum, the more effective it is in controlling the escape of saliva; at the same time this narrowness reduces the strength of the voice and alters to some degree

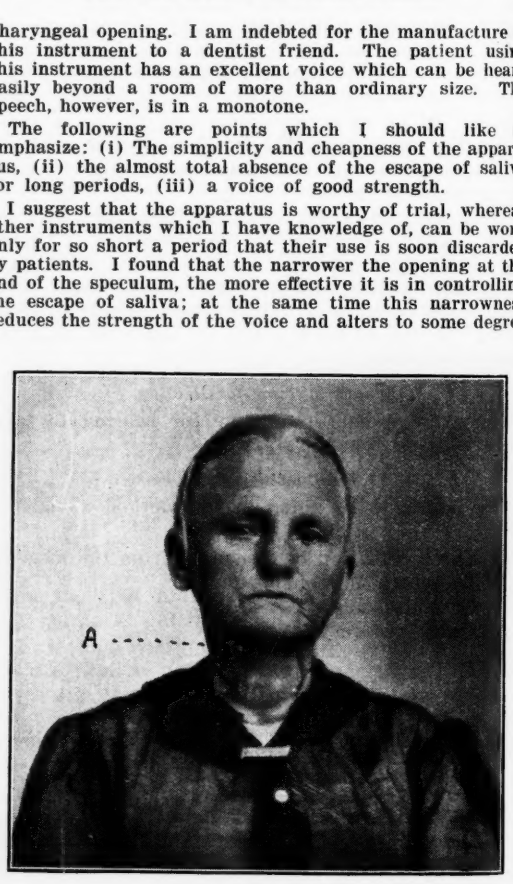

FIGURE V.

Showing Position for Phonation. "A" shows neck brought forward to make air-tight compartment behind shield. The patient wears a scarf around the neck when going about.

the pitch, which is raised. I selected Heath's speculum because of its wide base and long tapering body.

I would point out that the pharyngeal opening in this case lies immediately behind the hyoid bone; the apex of the speculum projects upwards and slightly backwards into the pharynx, about three-quarters of an inch of the "tube" being free in the pharynx. The explanation which I can offer for the control of the saliva is, I think, that the speculum fits neatly into the pharyngeal opening (without even much pulling from above) and that the saliva slips past the tube because of its narrow pharyngeal opening and its steep sloping sides.

Because I found that silver was affected by the saliva and fairly rapidly eaten away, I have substituted gold. Vulcanite was also tried and the patient carries a spare apparatus made of this material. However, it was found that in order that the latter type might be of sufficient strength, the tube had to be made thick and consequently of smaller calibre than the silver and gold ones. Rubber seems to attract the saliva. The strength and pitch of the voice were considerably interfered with when using instruments made of vulcanite or rubber.

If the simple experiment is tried of inserting the pitch-pipe alone (with a suitable piece of rubber tubing) into the pharyngeal opening, there is no alteration appreciable to the ear in the pitch of the voice and the strength of the voice is at its maximum. The best all-round results are obtained by a speculum of medium small size. The pitch is raised and the strength of the voice lowered when a speculum of very narrow outlet is used. Speech is of course in a monotone, the pitch of which can be altered to suit the fancy of surgeon or patient. The violin "G" pitch-pipe gives the most useful voice for a woman.

In this case, you will agree, the result is good and I should like to hear the experiences of other surgeons should they be persuaded to use the apparatus. I would like to state in passing, that in spite of some remarks which I have heard, this apparatus has no resemblance in construction to that devised by the late Professor Anderson Stuart. This case in its successive stages has been shown several times before meetings of this Branch.

Case II.

The second patient is shown to demonstrate the use of the rectangular skin flap in helping primary closure of the wound in a case of complete laryngectomy (see Figure VI).

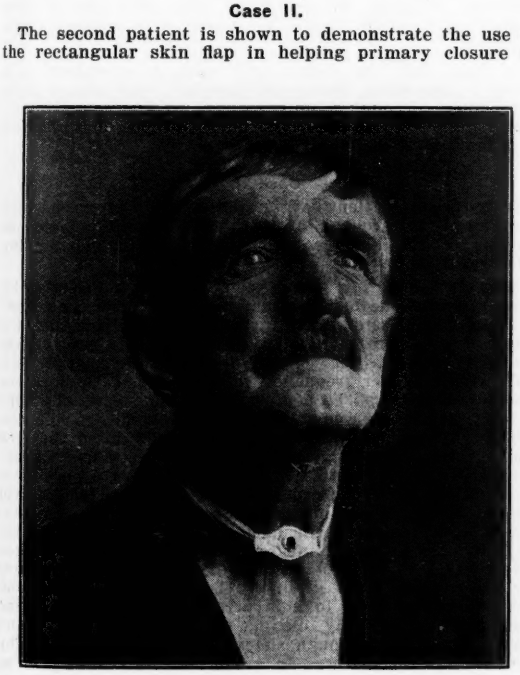

FIGURE VI.
Case II, Complete Laryngectomy. Showing Quadrilateral Flap Three Weeks After Operation.

The patient is a man, aged fifty-nine years, whom I first saw on July 28 last, when he gave the history of huskiness in the throat for twelve months and this huskiness had been increasing gradually. There was not much pain except upon swallowing, when the pain then went up to the ears. He denies syphilis and he had lost no weight. On examination he presented an extensive dull red irregular growth, honeycombed in appearance in places, involving the left true and false vocal cords in their entirety, extending forward into the anterior commissure and the anterior end of the right true vocal cord and the attachment of the epiglottis. The left arytenoid was swollen and fixed and the infiltration extended beyond for some distance. No response was obtained to the Wassermann test and there were no glands palpable in the neck.

On August 2 a preliminary tracheotomy, with excision of the isthmus of the thyreoid gland and separation of the trachea and the œsophagus by means of iodoform gauze was performed (local analgesia). At the same time the crico-thyreoid lymphatic glands were removed. There were three of them and they were definitely enlarged. These were sent to Professor Welsh, of the University of Sydney, for examination and he reported that they were free from growth. On August 16, that is less than three weeks ago, I did a total laryngectomy under deep cervical block analgesia, Dr. Meek kindly assisting me. The patient went through the operation without any ill-effects, the pulse being kindly taken throughout the proceeding by Dr. Ernest Culpin, who reported that it increased only during the process of separation of the trachea from the œsophagus. Specimens of the growth were sent to Professor Welsh who reported as follows:

> Section A.—Left true cord larynx. This showed a definite squamous epithelioma which had formed a mass nearly half an inch in greatest diameter and had invaded and destroyed the structures of the cord. It had also caused an excessive lymphocyte reaction at its advancing margin.
>
> Section B.—Right supraglottis region. Showed considerable inflammatory reaction with lymphocytes and plasma cells, but no sign of new growth.
>
> Section C.—Posterior surface arytenoids. Showed inflammatory reactions to a less degree and still no sign of new growth.

I wish to point out that this patient's wound is practically completely healed and that instead of the usual "T" shaped incision, the quadrilateral skin flap as used by Professor Tapia, of Madrid, has been used.

Drainage was by means of small rubber tubes above and at the bottom of the wound for forty-eight hours only.

Comment.

In connexion with these cases I would like to point out the following. The form of anæsthesia is, I consider, the all important point in the operation and from my experiences and the teachings at European clinics I am firmly convinced that general anæsthesia should be, if possible, avoided and that local analgesia is the most suitable method. The first patient was operated upon under rectal anæsthesia.

Also, I would like to refute the statement that "it is better for a patient to die than to be deprived entirely of his voice." Both these patients, you will see, are quite cheery and the lady with the artificial larynx is extremely happy with her lot. I have seen a number of patients after complete laryngectomy has been performed upon them and I am not inclined to believe that they, except seldomly, become despondent.

As long as the growth remains an intrinsic one, however extensive, the outlook is perhaps more promising when it occurs in this region than when occurring in any other part of the body.

Reference.

(1) R. Graham Brown: *Proceedings of the Royal Society of Medicine*, June, 1925; *The Journal of Laryngology and Otology*, December, 1925.

TWO CASES OF TRANSPLANTATION OF THE URETERS.

By GLEN H. BURNELL, B.S., M.D.,
Surgeon to Night Clinic, Adelaide Hospital.

Case I.

MISS C.C., *ætatis* thirty-four years, a trained nurse, consulted me on October 1, 1924, giving the following history:

Her illness commenced in August, 1922, with frequency of micturition. Soon afterwards she noticed pus in the urine. There was no pain. The urine was found to contain tubercle bacilli; no urological examination was made and she was treated for nine months with tuberculin. At the end of this time, as she was no better, her left kidney was removed and found to be definitely tuberculous. Her convalescence was rather stormy and blood transfusion was necessary. After the removal of the kidney, the frequency of micturition continued as before and she occasionally passed blood in the urine. She had gained 9·5 kilograms (twenty-one pounds) in weight during the three months prior to my seeing her.

On examination she was found to be well nourished, with no evidence of disease outside the urinary system. She was voiding urine every ten minutes during the day and on an average twenty times during the night. She had to void several times during the taking of her history. So bad was the frequency indeed that she had to wear constantly pads of absorbent wool and left her home only on very rare occasions.

Under spinal anæsthesia ("Stovaine") a cystoscopic examination was made. The bladder would contain only 30 cubic centimetres (one ounce) and attempts to distend it caused severe pain, although the introduction of the cystoscope had been painless. Just internal to the left ureteral orifice was a large indolent "nail-scratch" ulcer. The right ureter was catheterized and the urine therefrom found to contain some red cells, but no pus cells or tubercle bacilli.

A diagnosis of tuberculous cystitis was made and an attempt made to get the ulceration to heal by local treatment. This took the form of washing out the bladder with boracic lotion and then injecting ten cubic centimetres of "Kanakol" a mastic varnish preparation highly recommended by French writers. At the same time she was given capsules of methylene blue and sandalwood oil by mouth. Under this treatment the patient improved until she could hold urine for one hour, but as soon as it was stopped the frequency and dysuria became as bad as ever. In September, 1925, it was decided to transplant the ureter into the large bowel, the risk of this procedure having been pointed out to the patient who was an intelligent nurse.

On September 15, 1925, the abdomen was opened by suprapubic incision. The posterior parietal peritoneum was opened just below the pelvic brim and the right ureter located. It was then followed down through the pelvis almost as far as the bladder, the peritoneum being divided along its course, but its blood supply being disturbed as little as possible. The ureter was divided near the bladder, the lower end ligated and buried and the incision in the peritoneum closed, but this time behind the proximal portion of the ureter, so that finally about five centimetres (two inches) of ureter were left projecting into the peritoneal cavity through a very small opening just below the pelvic brim. The pelvic colon was next brought over in such a way that the ureter lay alongside it without tension on either structure. The ureter was next prepared for insertion. It was first split upwards by cutting along its length on one side with scissors for a distance of one centimetre, so that it opened out into a triangular flap. Fine chromacized gut was then passed through this flap near its base and tied around the flap, thus a firm piece of tissue was gained for traction and the opening of the ureter was left above it. Both ends of the suture were left long and threaded on to curved bowel needles. Next, midway between two longitudinal muscular bands the serous and muscular coats of the large bowel were completely divided for a distance of 3·75 centimetres (one and a half inches), so that the mucous coat pouted into the wound. At the lower end of this incision, a stab wound was made through the mucosa. The ureter was then put into the bowel by passing both needles on the ureteral stitch through the stab wound into the bowel and then bringing them out again 1·25 centimetres (half an inch) lower down, their points of exit being about one centimetre apart. These two ends, when pulled taut and tied on the outside of the bowel, securely anchored the cut end of the ureter 1·25 centimetres (half an inch) inside the bowel and well away from the small stab wound in the mucosa; at the same time the ureter lay in the trough formed for it by the incision in the sero-muscular coat. This portion of the ureter was then buried by a series of Lembert's sutures passing over the top of the ureter, but not picking up its sheath. The ureter was now almost completely surrounded by muscular tissue, except a small area on the floor lying on the mucosa. Finally and most important, a couple of "anchor" sutures were put into the bowel just proximal to the Lembert sutures, these picking up the sheath of the ureter and their purpose being to prevent any retraction of the ureter from its bed. The perineal cavity was then closed, a rubber tissue drain was left into the pouch of Douglas and a tube was sewn into the rectum. (The above technique is that of Coffey.) No drainage came through the suprapubic wound and the drain was removed on the second day. Very little urine appeared through the rectal tube for the first forty-eight hours, it being probably absorbed by the bowel and it seems as if the rectal tube was not necessary. After two days urine began to be voided by the bowel. There was a good deal of pain in the right loin and vomiting for the first three days and I wondered whether the sutures had been drawn too tight, but after voiding by the bowel commenced, this pain gradually eased off.

A month after operation the patient was holding her urine for nine to ten hours at night and three to seven hours during the day. She remained well till March 15, 1926, when she became affected by an attack of acute pyelitis, with pain in the right loin, pyrexia and the vomiting of clear watery fluid. She also had a very irritable dry cough. Under treatment with hexamine this subsided.

In July, 1926, she commenced work as attendant in a doctor's consulting rooms and has not been absent from duty since, although admittedly the work is not arduous. She still has no difficulty in holding urine, but gets an occasional pain in the right loin.

Case II.

In the second patient both ureters were anastomosed with the bowel on account of advanced chronic submucous fibrosis of the bladder which followed an old standing bilateral pyelitis.

Mrs. H. C., aged forty-three years, was seen on October 18, 1923. In 1918 she had contracted a "chill on the bladder" and had been passing urine very frequently. This subsided after a few months. In 1920 she had a gynæcological operation (repair of cervix and uterine suspension). Following this her frequency returned worse than in the first attack and had been present ever since. At the time of examination she was voiding urine every fifteen minutes. Cystoscopy and ureteral catheterization disclosed that the bladder was very retracted, holding forty-five cubic centimetres (one and a half ounces); both ureteral specimens of urine contained dense pus and there were several polypi on the neck of the bladder. She also had a urethral stricture. Treatment consisted of destroying the polypi by fulguration through an operating cystoscope, repeated lavages of both renal pelves and dilatation of the urethral stricture. The urine gradually became free of pus and the patient was able to hold urine for three hours. She was seen occasionally during the next two years and remained better, although she still had frequency, but by February, 1926, she was in great distress, voiding urine almost continuously.

A pyelogram at this stage showed both renal pelves and ureters with normal outlines. It was now noticed that the

bladder capacity was only thirty cubic centimetres (one ounce) and attempts to distend it under anæsthesia caused the mucosa to split and bleed, so it appeared that little was to be hoped for from this method of treatment. It was therefore decided to anastamose both ureters with the bowel.

On March 4, 1926, the abdomen was opened in the median line and the right ureter was anastamosed with the pelvic colon. Coffey's technique was used as before, except that, before the ureter was actually put into the bowel, one end of the ureteral suture was pushed about eight centimetres up the lumen of the ureter and the ureter sewn into the bowel with the other end of the suture. This is a modification of Coffey's technique by another writer whose name I have forgotten.

The idea of putting the catgut up the ureter is that in the event of any possible kinking of the ureter the urine may be enabled to leak down alongside the catgut. A rubber tissue drain was again put into Douglas's pouch and a tube was put into the rectum. On this occasion 2·5 centimetres (one inch) of the ureter were in contact with the bowel wall. On March 15, 1926, the abdomen was reopened through the same incision and the left ureter was put into the colon a little higher up and on its left side and 3·75 centimetres (one and a half inches) of ureter were left in the bowel wall.

Two weeks after operation she could hold urine all night and for several hours during the day and she has never had any difficulty in doing so since that time.

Her convalescence was not nearly so stormy as that of the previous patient who had only one kidney. She remained well until November 9, 1926, that is eight months after operation, when she had an attack of shivering with pain in the right loin and a very irritable cough. This was treated by hexamine and subsided. She has remained well since and does her own house work, but gets an occasional pain in the right loin.

Comment.

After the experience of these cases I am inclined to think that it would be better in bilateral cases to make a separate incision on each side of the "gridiron" type, as used for appendicectomy. I think probably the drain into Douglas's pouch and the tube in the rectum can be discarded. It is also, I think, worth while putting the catgut up the lumen of the ureter as was done in both operations on the second patient.

An interesting feature of both cases was the very irritable and dry cough which developed during the attack of pyelitis. In the first case it was almost constant for a week. Both patients have been seen at the time of writing and appear to be very much happier and more comfortable than before operation.

REMOVAL OF BLADDER AND URETHRA IN THE FEMALE FOR MALIGNANT DISEASE.[1]

By F. A. MAGUIRE, D.S.O., M.D., Ch.M. (Sydney), F.R.C.S. (England),

Honorary Assistant Gynæcological Surgeon, Royal Prince Alfred Hospital; Honorary Gynæcologist to Out-Patients, Saint Vincent's Hospitay, Sydney; Lecturer in Anatomy, The University of Sydney.

TREATMENT in the following case of squamous epithelioma of the female urethra consisted in the application of diathermy, transplantation of ureters, excision of the bladder, urethra and vaginal wall and reconstruction of the pelvic floor. The satisfactory result so far obtained justifies this report.

L.T., spinster, *ætatis* fifty years, was seen on January 25, 1927, for the first time. Inquiry as to her previous history revealed that the menopause had occurred four years previously. She remained in good health until two months before I saw her, when there was a little hæmorrhage from the vagina. This had been repeated three times since then. Immediately after the hæmorrhage she consulted her medical adviser, Dr. Basil Kennedy, of Maitland, who told her she had a lump in the passage. She was sent to Sydney where she was informed that she had an inoperable carcinoma of the uterus, involving the bladder. On examination there was found to be a mass of solid infiltration around the middle part of the urethra. The mass was adherent to the pubic ramus on the left side. It extended for five centimetres (two inches) up the vagina, bulging into the vagina. The vaginal surface was ulcerated and had a slight foul-smelling discharge. It bled easily. The urethral orifice could be recognized. The mass seemed to extend forward under the clitoris. The vaginal vault and the *cervix uteri* were not affected. There was a distance of nearly two and a half centimetres (one inch) between the uppermost limit of the mass and the cervix.

A diagnosis of carcinoma of the urethra was made. There had been no pain, no discomfort and no difficulty in micturition, nor had the patient noticed any discharge till a few days before. The inguinal glands were not enlarged.

In view of the short history and the absence of enlargement of the inguinal glands it was considered that the fixation to the pubis was due to local inflammatory reaction from the ulcerated surface in the vagina. It was thought, therefore, that thorough extirpation of the infected area with diathermy would clear this up and render the mass mobile. Further as the urethra was involved probably up to the sphincter of the bladder, it was thought best to remove the bladder and urethra. This necessitated transplantation of the ureters. The position was placed before the patient and her relatives, when the alternatives of transplantation to the skin surface or into the bowel with the probable risks and discomfort of each procedure were explained to them. The patient chose the latter.

On January 31, 1927, the patient was admitted to Saint Vincent's Hospital. On the same afternoon she was unable for the first time to pass urine. Attempts were made to pass glass and rubber catheters, but it was impossible to get any instrument into the bladder. The bladder had to be drained suprapubically by a trocar and cannula. A small rubber catheter was passed through the cannula and fixed in position.

On February 2, 1927, under ether anæsthesia induced by the open method an incision was made in the midline below the umbilicus. The area where the suprapubic catheter was placed, had been sealed off under a dressing and the lower end of the incision was left 3·75 centimetres (an inch and a half) above it. When the abdomen was opened the hypogastric glands were palpated and no enlargement was detected. The pelvic colon fortunately was long and mobile with a long mesocolon. The left ureter was dealt with first. The peritoneum was divided along the pelvic wall, the ureter being in front of the hypogastric artery. The ureter was freed from the brim of the pelvis to the point where it commenced to pass into the depths of the broad ligament. At this point it was ligatured with silk and cut through behind the ligature. The proximal free end was lifted up and there were 6·25 centimetres (two and a half inches) of ureter free and mobile. This was implanted into the pelvic colon at the brim of the pelvis by Coffey's method. The peritoneum and muscular coats of the bowel were divided for five centimetres (two inches), an opening was made through the mucosa at the lower end and the ureter was placed in the groove so made. It lay on the submucosa with twelve millimetres (half an inch) of ureter in the lumen of the bowel. The end of the ureter had been split for twelve millimetres (half an inch) and a silk thread passed through it. This was threaded on a needle passed through the opening in the mucosa and anchored to the bowel wall twelve millimetres beyond the opening. The groove was then closed, the muscular coats and peritoneum being brought together with silk sutures and the whole line buried with Lembert's sutures of fine silk. The ureter was anchored to the bowel with two more sutures and the bowel was fixed to the parietal peritoneum where the ureter lay on the posterior wall of the abdomen. This procedure was repeated on the

[1] The patient described herein was shown at a meeting of the New South Wales Branch of the British Medical Association on May 12, 1927.

right side. The length and mobility of the pelvic colon enabled one to plant the right ureter in the same way at the brim of the pelvis. A drainage tube was placed over each uretero-colic junction and the abdomen was closed.

The patient was then placed in the lithotomy position and the growth was exposed. On full exposure it was seen that the growth involved the lower half of the anterior vaginal wall. It was quite circumscribed and not firmly adherent to the pubes. The surface was ulcerated and bled easily. A snipping was taken for examination. The whole area was then treated with diathermy, a Watson's Number 1 machine of latest pattern, with a current of 1,650 milliampères being used. The patient returned to bed in good condition.

Within twelve hours of operation the patient passed urine by the bowel. A daily record of amounts was kept. In the first twenty-four hours four hundred and eighty cubic centimetres (sixteen ounces) of urine were drawn off by the rectal tube and within five days she was passing over a litre a day. There was no discomfort. At first the bowel had to be emptied every hour, but on giving small doses of morphine and washing the bowel out twice a day with 1-1,000 "Acriflavine" a tolerance was quickly established and in a few days she could hold the urine in the bowel for one and half to two hours at a time. The urine that was passed was four times out of five clear and clean as if from the bladder and then it would be mixed with fæces. The blood urea was estimated every forty-eight hours as a guide to the functioning of the kidneys. The day before operation it was sixty-one milligrammes per hundred cubic centimetres. Six days after operation it was fifty-eight milligrammes per hundred cubic centimetres and four days later it was thirty-four milligrammes.

There was no further drainage through the suprapubic catheter which was left in position for a few days. There was no drainage from the tubes which were placed over the uretero-colic junctions so they were withdrawn in forty-eight hours. The abdominal wound healed by first intention.

On February 16 a general anæsthetic was given and the vaginal growth was found to have sloughed away, leaving a clean healing surface. The base of the area was clean. But in the site of the urethra there was still malignant tissue. A second application of diathermy was therefore made over the area and particularly towards the base of the bladder.

The patient made good progress and began to improve in general condition. The bowel continued to show increased tolerance to the urine. At night the bowel had to be emptied two or three times only.

A culture was made from a clear specimen of urine from the bowel and a vaccine was prepared from it. Injections of the vaccine were given weekly in order to minimize the risk of an ascending pyelitis. Seven injections were given in all.

On March 16, six weeks after the original operation, the abdomen was opened under general anæsthesia. The anterior layer of the broad ligament was opened on each side and the anterior division of the hypogastric artery was exposed and ligatured. The gland-bearing area on each side was cleaned out, though no enlarged glands were found. The bladder was freed from its attachments after the peritoneum over it was reflected to the sides of the pelvis. The stumps of the ureters were freed and a large swab was placed over the loosened bladder. The patient was placed in the lithotomy position. An incision was made in the vaginal wall clear of the margin of the diathermy area. It was twelve millimetres (half an inch) below the *cervix uteri* and extended out nearly to the lateral angle of the vagina on each side. The incision was deepened and the freed bladder with the remains of the urethra and the underlying vaginal tissue were drawn out of the pelvis and removed. The margins of the vagina were united with chromacized gut and a small vaginal pouch was left with the cervix about two and a half centimetres (an inch) behind the pubes.

The abdominal incision was reopened, the swab removed and the uterus was brought forward to form a false floor for the pelvis. The *fundus uteri* was fixed to the connective tissue on the back of the pubes. The peritoneum that had been reflected, was fixed to the fundus and sides of the uterus with the tubes and ovaries folded back towards the middle line. The abdomen was closed in layers.

The patient made an uninterrupted recovery and left hospital on April 14, 1927. On March 30 the blood urea was 32 milligrammes per hundred cubic centimetres.

The following pathological report was made by Dr. L. Utz on a snipping taken on February 16:

> There are masses of squamous cells invading the tissue and spreading in all directions. The condition is most probably a squamous epithelioma.

He reported on the bladder removed on March 14 thus:

> Macroscopically after transverse section through the bladder the following points were noted:
>
> (1) Very hypertrophied bladder wall.
>
> (2) Hypertrophied bladder mucosa.
>
> (3) A nodule about the size of sixpence at the extreme end of the wall continuous with the urethral orifice.
>
> Macroscopical sections of the wall and mucosa show mere hypertrophy, but sections of the nodule show a condition of squamous epithelioma with cell nest formation. This at first sight appears to be a secondary nodule, but considering its position and also the microscopical characters, I think it is more likely to be an extension of the primary lesion.

On June 5 the patient looked well and was putting on weight. She was shown at the clinical evening at Saint Vincent's Hospital on May 12. By that time she could go from 10 p.m. to 7 a.m. without being disturbed by the necessity for relieving the bowels and could go from two and a half to three hours during the day. There was a small unhealed area in front of the pubes which was apparently healing slowly on account of the proximity to the bone. To be quite sure that the area was clean, an application of fifty milligrammes of radium was made to this area for twelve hours on June 1.

At the present time the patient has put on three kilograms (seven pounds) in weight, is gaining weight steadily and is comfortable and well.

Notes on Books.

A HOSPITAL PHARMACOPŒIA.

A NEW EDITION of the Pharmacopœia of the Royal Prince Alfred Hospital has been issued.[1] It differs slightly from the previous editions, by a few additions and a few omissions. The formulæ are excellent, but it is deplorable that each large hospital in the Commonwealth insists on having its own little book, instead of adopting one uniform set of prescriptions which have been proved by experience to be efficacious and economical. The cover of the book has a nice appearance; the inside leaves much to be desired. There has been need for but little editing, but that little has been neglected. The following sentence from the "suggestions for beginning diabetic treatment" is not English: "Blood sugars are desirable to determine whether increases may be safely given or not." We are interested to learn that the dose of *apomorphinæ hydrochortidlum* is from 1 to 10 to ¼ grain by mouth. The book is full of similar indications of carelessness on the part of those responsible for its production. The setting is equally bad.

[1] Pharmacopœia of the Royal Prince Alfred Hospital, 1927, Angus and Robertson, Limited, Sydney. Cr. 16mo., pp. 85. Price: 4s. net.

The Medical Journal of Australia

SATURDAY, JULY 2, 1927.

A Federal Research Institution.

A MOTION by Mr. J. E. West, M.P., has recently been included in the notice paper of Federal Parliament to the effect that the Commonwealth Government should set aside an area of twenty acres of land in Federal Capital territory for the purposes of a research institute, station and farm and that the sum of one million pounds sterling be provided out of consolidated revenue, the interest of which should be used to equip and maintain laboratories and field stations, to employ scientific workers, to defray the expenses of annual and triennial congresses and to establish scholarships and research fellowships. Mr. West's proposals appear to be limited to research in animal and plant genetics and in preventive and curative veterinary science. The mover is seeking the support of those in authority in our universities and of the members of the several State Governments. The conception has been born of a desire to put the money collected by the Federal Government from the people of Australia to good use. The economic aspect of the proposal will appeal to everyone concerned in the prosperity of Australia, for nothing can be more detrimental to her prosperity than a policy of parsimony in regard to the attack on diseases which destroy cattle and crops. Mr. West has foreseen the necessity of removing the temptation from future Treasurers of finding the sums set aside for this research a convenient source of money for divers purposes. He proposes that the capital sum of one million pounds sterling be set aside as an endowment in such a manner that encroachments could not be made on it. The interest, he estimates, would amount to approximately £50,000 a year. This annual sum would be additional to moneys spent by State Governments or by private individuals or public bodies on similar investigations. He does not give details concerning the amount he would sink in bricks and mortar, nor does he indicate how far he would uphold the principle that the man who pays the piper, should call the tune. Instead of details he contents himself with arguments in favour of the skeleton proposal, but he does embody in his arguments a statement that research should be undertaken for the advancement of knowledge and should extend into the realms of biology.

As far as it goes Mr. West's scheme is an admirable one if it is properly safeguarded. In its essence it may be described as a plan to put aside a large sum of money for the advancement of veterinary and agricultural knowledge. A million pounds in these days of extravagant governments is not a large amount to invest in the safety of stock and crops. It would be easy to save this sum within a few years if certain diseases of cattle, sheep and swine were studied and mastered. Added to this direct application of newly acquired knowledge to industrial undertakings, it must be remembered that all scientific work has a value that cannot be appraised. This part of the scheme must therefore be applauded and unstinted support meted out to it.

With the question whether it would be wise to erect a research institute in Canberra we need not concern ourselves. Of far greater importance is the matter of the organization of the work and the control exercised over the workers. If it is proposed to create a small board to be responsible for the appointments to the various research positions and to act as trustee of the public money to be spent, full approval can be given to the scheme. But it is essential that the trustee must not be endowed with power to direct the research, to select the subjects to be investigated, to demand results within a given time or to determine how much of the money should be spent on any given piece of work. Those are matters that must be left to the scientific investigator.

Mr. West has made out a good case for the setting aside of one million pounds sterling and an area of land in Federal Territory for veterinary and agricultural research. But if it is worth while to invest this sum of money to safeguard cattle and sheep, wheat and other grains, how much more worth while would it be to earmark money for the protection of the health and lives of human beings? If

the Government of the Commonwealth is prepared to endow a veterinary and agricultural institute in Canberra to the extent of one million pounds, a claim for at least twice that amount should be made for the safeguarding of the people of Australia. It would be necessary to appoint a small board as trustee with limited powers and to leave the medical research workers untrammelled by departmental or official control or direction. A reasonable expenditure on bricks and mortar would be desirable, but the major part of the income of the sum allocated each year should be reserved as liberal salaries for competent scientific workers. The director of research should be in full charge of the organization and should be a coordinator of energies and a collator of results. Ill-health costs the Commonwealth untold sums of money each year. A systematic raid on disease, no matter how costly, would result in a priceless yield, provided that the investigators were competent and subjected to no irritating dictation by politicians or administrative officers. Above all the public would have to be educated to the fact that if scientific research is to produce knowledge of real value, the workers must be given time and opportunity. It is destructive to good work to demand results on a given subject within a given time.

Current Comment.

THE WASSERMANN REACTION AND TREATMENT IN SYPHILIS.

SINCE the introduction of the Wassermann test the treatment of syphilitic patients has been put on a more satisfactory basis than was previously possible. The result of the test has been used in determining the cure or otherwise of a patient. It is recognized that the production of a reaction, in other words the power of the serum to fix complement and to prevent hæmolysis, is an indication that the syphilitic process has not been arrested. On the other hand the production of hæmolysis, that is an absence of reaction, does not always mean that the syphilitic process has been brought to an end. It is recognized that the Wassermann reaction is not an example of the Bordet-Gengou phenomenon. It is held to be dependent on the presence in the serum of a lipoidal substance in a colloidal state which has the power of inactivating complement. It is believed that this lipoidal substance is the result of the biological activity of the *Spirochæta pallida* The resulting change in the plasma is a physical one, a molecular rearrangement. It is possible to offer an explanation for the non-production of a reaction when the syphilitic process is still active. In the early stages of syphilis before there has been time for a response on the part of the body of the host to the invading organism, a reaction to the test will not be produced. Similarly in long standing infections the spirochæte may become so walled off or isolated by fibrous tissue that the so-called Wassermann substance will be absent from the blood serum. Considerations of this nature most probably account for the well-known clinical fact that a response to the Wassermann test may sometimes be obtained with the cerebro-spinal fluid when it cannot be produced with the blood serum. But there are other circumstances in which no reaction to the test may be obtained. Shearman pointed out in this journal in 1923 that no reaction may occur in treated syphilis when by the aid of medication the spirochæte though not necessarily eradicated, is temporarily overcome and becomes quiescent. He holds also that in untreated syphilis the defensive elements of the body may gain the ascendancy to an extent sufficient to render the spirochæte temporarily *hors de combat*. He thinks that this may explain those cases of syphilis in which a reaction becomes manifest only after a provocative injection of an arsenical compound has been given. He indicated that no reaction may be obtained when the invading organisms are overwhelming in their action and the body is "unable to marshal its defensive forces," as in malignant syphilis. In other words the tissues do not react to the invading organisms. In support of this view he referred to instances in which a serum yielding a reaction, fails to do so at the time of impending death. Whether or not the explanations of these various manifestations as given by Shearman are correct is really not important to the present discussion. The importance lies in the necessity for recognition of the variability of the response to the Wassermann test in the presence of uncured syphilis and in the elaboration of methods of treatment which will result in permanent absence of reaction, that is in the elimination of latent syphilis.

In a recent investigation carried out on behalf of the Medical Research Council, E. E. Glynn, R. E. Roberts and P. M. Bigland have attempted to correlate the effects of treatment with the responses to the Wassermann test of syphilitic male patients attending the Liverpool Royal Infirmary.[1] They have come to conclusions which are of importance to every medical practitioner called upon to treat syphilitic patients. On account of inadequate attendance only 711 out of 3,429 patients were available for study of the effect of the initial "admission treatment" and only 503 for the study of the effect of "mercury continuation treatment" or no treatment. The question will immediately be asked whether con-

[1] "The Effect of Treatment on the Wassermann Reactions of Syphilitic Patients," by Ernest Glynn, R. E. Roberts and Phoebe M. Bigland; Special Report Series, Number 107, Medical Research Council of the Privy Council, 1926.

clusions drawn from study of such a small percentage of patients would be applicable to the whole number. The authors hold that the conclusions are not the result of fallacy arising from selection for several reasons. In the first place treatment depended mainly on the regularity of attendance. In the second place a larger proportion of those treated returned voluntarily with clinical relapses. In the third place treated and untreated patients were classified similarly and deviations from standard treatment affected equally both the treated and the untreated.

The technique used throughout was that known as the Number 4 Technique of the Medical Research Council, but after incubation with the hæmolytic amboceptor the racks were placed in cold, not iced water for about half an hour before readings were made. Ice was used only in very hot weather. The results of the test were described in six degrees: ++ as strongly positive, +± as positive, + as weakly positive, ± as "weakly negative," $\frac{+}{-}$ as "negative" and — as "completely negative." What the authors mean is that — was used for complete hæmolysis and ± and $\frac{+}{-}$ were used for different degrees of incomplete hæmolysis. Throughout their discussion, however, they have reduced the six degrees to three, positive (+), partially positive (±) and "negative" (—). The technique was regarded as satisfactory because the results were as a rule definitely positive or "negative" and because errors on retesting control specimens of serum were small. All patients were given a "standard admission course" of six intravenous injections of "Neokharsivan" or "Novarsenobenzol" with eight intramuscular injections of grey oil. It was found that the sooner treatment was undertaken, the greater was the probability of a "serological" cure. The admission course failed unexpectedly in some instances. Of thirteen patients whose serum yielded no reaction on admission, three yielded a positive result after the admission course and ten a partially positive result. Of nine patients who yielded a partial reaction before treatment, two gave a positive result after the admission course and seven still yielded a partial reaction. It was cases of this nature to which Shearman referred and which he thought must be extremely rare. Shearman's suggestion has already been mentioned. His view of the ascendancy of the defensive mechanism of the body implies an excessive normal response. While this is possible, it is conceivable that under the circumstances in question a large amount of the pseudoantigen of a lipoidal nature will be formed and that it is imprisoned in the tissues. When the metal, arsenic, mercury, silver or bismuth, is introduced a change of a physical nature occurs and the pseudoantigen is set free. Glynn, Roberts and Bigland refer to conclusions of other authors similar to their own, but do not offer any explanation of the phenomenon.

Another question studied by these observers is the incidence of relapses, as evidenced by a change in the response to the Wassermann test, after continuation treatment by grey oil and mercury or after no treatment. This question was studied in 503 patients. Among this number 182 relapses occurred. In another series of 109, thirty-five second relapses occurred. It was found that over a "continuation period" of the first twelve months the response to the Wassermann test was changed to "partial or positive" twice or one and a half times as frequently with grey oil and mercury tablets respectively as with no treatment. Over a continuation period of the first twenty-four months the total first and second "tablet" relapses were one and a third and one and a half times as frequent as with no treatment. Glynn, Roberts and Bigland submitted their findings to statisticians and the conclusion was reached that the incidence of grey oil first relapses was on the whole statistically significant. In the case of the grey oil second relapses and the mercury tablet first and second relapses the observed differences were not sufficient to permit their being regarded as conclusive evidence of an essential difference, but the evidence pointed in the same direction as that of the grey oil first relapses. Glynn, Roberts and Bigland conclude that mercury tablet courses certainly do not diminish the relapse incidence, but that very probably they increase it; grey oil courses definitely increase the relapse incidence. They also conclude that it is unjustifiable to treat syphilis with mercury alone as a routine in order to prevent clinical or "Wassermann relapses" and finally to cure the disease by destroying residual spirochætes. The failure of mercury in "Wassermann negative" latent or quiescent syphilis (their criticisms refer only to this variety) is due to the different pathological condition treated. The mercury is unable to attack the inaccessible residual spirochætes and most probably depresses the patient's immunity. "Salvarsan" is a more potent spirochæticide than mercury.

It is obvious that this is a matter of great practical importance. Mercury is used by many practitioners throughout the whole course of treatment of patients with syphilis. When a patient has failed to react to the Wassermann test for the first time in the course of treatment, the treatment is naturally continued until the test has been repeated several times with the same result. "Latent" syphilis can be distinguished from cured syphilis only by repeated absence of reaction to the test over a long period. Before the findings of Glynn, Roberts and Bigland can be accepted without reservation, it will be necessary to discover whether the patients who relapsed under mercury treatment, were not suffering from a more virulent form of the disease than those who are labelled as having no treatment during the continuation treatment. All the patients received the standardized treatment (with slight but very evenly distributed modifications). The only factor which could not be standardized was the virulence of the infection. This is a matter which is difficult of determination, and in the absence of this determination findings of a more definite nature and with larger numbers of patients will have to be forthcoming before the use of mercury in latent syphilis will be abandoned.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Kraurosis Vulvæ

A. HOCHENBICHLER (*Wiener Medizinische Wochenschrift*, February 19, 1927) states that the main point of difference between *kraurosis vulvæ* and leukoplakia lies in the contraction of the subcutaneous tissues of the external genitalia seen with the former complaint. Histologically this is due to the involvement of the subepithelial connective tissue, especially the elastic fibres in kraurosis. He has had experience of six cases which with one exception occurred in women at or past the menopause. The exceptional case was that of a patient, aged thirty-three years, who was sterile after ten years of marriage. There was genital hypoplasia in this instance. In one of the other cases the ovaries had been removed following hysterectomy for fibroids. Other possible causes of pruritus had been excluded in all instances. Hochenbichler employed subcutaneous injections of ovarian extract in the treatment. On an average twenty injections were spread over six weeks and definite improvement was noted in all instances after the fourth or fifth dose. Pruritus disappeared immediately in four cases, with two there was a recurrence and local treatment was necessary. From his success with glandular treatment he is of the opinion that kraurosis is largely a manifestation of deficient ovarian secretion.

The Early Diagnosis of Pregnancy.

A. RANDA (*Wiener Medizinische Wochenschrift*, January 15, 1927) describes a new sign for the diagnosis of pregnancy in the first month. On vaginal examination he has found a small area of œdema on the anterior wall of the uterus which remains depressed for a short period after the finger is removed. He attributes this to venous congestion surrounding the area of implantation of the ovum in the uterine wall. Pressure should be applied gently and firmly. The test was most successful between the ninth and twelfth weeks and the result was doubtful at earlier periods. In 60% of all patients in the first three months of pregnancy the sign was elicited.

Radiotherapy in Gynæcology.

E. GAUSS (*Zeitschrift für Urologie*, September, 1926) summarizes his views regarding radiotherapy for various gynæcological conditions. The treatment of vulvar and vaginal carcinoma by radiotherapy gives results equal to those following operation. Cure of cervical carcinoma is somewhat more frequent after operation than after the sole use of X rays or radium. Relative cure of inoperable conditions by radiotherapy occurs in 10% of patients. He does not recommend this treatment for corporeal carcinoma. It gives good results with sarcoma of the uterus. Bad results have followed its use in ovarian carcinoma. The prognosis following operation for ovarian sarcoma is much better. A sufficient number of cases of carcinoma of the tubes or of chorion-epithelioma have not been noted to enable any reliable deductions to be made. The greatest value of radiotherapy is in myoma and menorrhagia. The risk of overlooking a carcinoma of the uterine body can be minimized by a diagnostic curettage. Tuberculosis of the tubes and the peritoneum also yields very gratifying results. Radiation has also been used in small doses for non-tuberculous inflammatory conditions of the tubes with success. Sterilization for pulmonary tuberculosis or menorrhagia in women over forty is best carried out by means of radiotherapy.

The Pathology and Causation of Dysmenorrhœa.

BECKWITH WHITEHOUSE (*Journal of Obstetrics and Gynæcology of the British Empire*, Winter Number, 1926) has studied a series of fifty consecutive patients suffering from severe dysmenorrhœa. The investigation was carried out by (i) the observation of clinical and pathological details in the individual over a series of several consecutive "periods," (ii) examination of the menstrual lochia in patients both with and without menstrual pain and (iii) correlation of the clinical symptoms with the physical signs in the pelvis, especially with regard to the severity of the menstrual pain. The author arrived at the following conclusions. Non-conceptional dysmenorrhœa should be sharply defined as a clinical and pathological entity in contradistinction to menorrhagia, which is a symptom only implying painful menstruation. Non-conceptional dysmenorrhœa is always associated with the expulsion of tissue from the uterine cavity in the form of flakes, plaques or casts. The severity of the pain is directly dependent on and proportionate to the degree of denudation of the endometrium and to the size of the fragments expelled from the uterus. It is dependent only in a secondary sense upon the anatomical conformation of the uterus and the nervous control of the individual. The tissue expelled from the uterus in the menstrual lochia consists, usually of hyperplasia decidua. It may or may not be associated with fibrin and the proportion of each constituent varies in different cases. The classification of uterine casts into fibrinous and tissue casts appears to serve no useful pathological purpose. The distinction is one of degree only. So-called membranous dysmenorrhœa or enfoliative endometritis is merely an extreme degree of a comparatively common pathological condition of the menstrual decidua. Hyperplasia of the menstrual decidua is probably the reflection of excessive lutein activity or high vitality of the ovum. Non-conceptional dysmenorrhœa is, therefore, an exaggeration of the positive menstrual phase and is due to precosity in decidual development. It appears to imply a hypertonic sex impulse which in due course tends to become exhausted. The aim of treatment should be to initiate an early negative phase by inducing degeneration of the *corpus luteum*. Operations upon the uterus can be regarded only as palliative in the relief of pain associated with non-conceptional dysmenorrhœa.

Treatment of Climacteric Hæmorrhage.

F. MIKULICZ RADECKI (*Deutsche Medizinische Wochenschrift*, December 3, 1926) refers to the results obtained at the Leipzig clinic following diagnostic curettage in cases of hæmorrhage at or after the menopause. Of five hundred and forty-one women suffering from uterine hæmorrhage forty-five or 8·3% had been treated symptomatically by general practitioners for periods varying from a few weeks to a year. The condition of seventeen was inoperable and nine were borderline cases. The importance of exploratory curettage or removal of cervical tissue is seen in the records for 1925 when 4·6% of two hundred and sixty-one patients with hæmorrhage suffered from malignant disease. The author acknowledges that the average practitioner has frequently no time to examine his patients thoroughly nor the facilities to perform a diagnostic curettage in his rooms and therefore he has devised an ambulatory method of obtaining specimens. An injection of morphine and scopolamine is given, the vulva is shaved and the vagina is douched. The cervix is infiltrated with fifty cubic centimetres of a 0·5% solution of "Novocain" and adrenalin. Anæsthesia is complete in five minutes and dilatation is easily performed. In a series of eighty-two patients only three complained of slight pain. The uterine cavity is swabbed with 4% formalin and a plug is left in the vagina to absorb any discharges. The patient is observed for three hours and then allowed to go home. He maintains that this method can be safely used in the consulting room. It will render the early diagnosis of carcinoma more common and in non-malignant conditions will frequently cure the hæmorrhage.

OBSTETRICS.

Pelvic Thrombophlebitis.

F. BENZEL (*Deutsche Medizinische Wochenschrift*, November 26, 1926) discusses the various causes of thrombosis of the veins of the uterus and appendages. He recognizes two forms, a thrombophlebitis localized to the pelvis and a pyæmic form with general metastases. The former occurs in the veins of the uterine plexus and is due to puerperal wound infection following full term delivery or abortion. In addition it may be caused by infected submucous myomata, infection following cervical operations or the use of ill-fitting pessaries, especially if they have been *in situ* for a long period. Fortunately in the majority

of non-puerperal cases the virulence of the organisms is low and there is time for the formation of a leucocytic barrier. The thrombosed veins and the surrounding exudate can often be felt at the level of the ischial spine on one or both sides as an indefinite but painful swelling. The uterus and appendages are usually in normal position. At times there is a more dense swelling, worm-like to the finger and extending towards the parametrium, while occasionally the swelling may be the size of a small orange and stony hard. The condition is much more serious when the ovarian veins are affected, as occurs in many puerperal forms. Pulmonary embolism is more likely to occur and *phlegmasia alba dolens* is often noted. Although Bumm had a 37% recovery among fifty-one patients following ligation of the affected veins, it is difficult to choose the patient suitable for operation. Complete rest, no vaginal treatment and nourishing food still give the best results. Digitalis is required for a failing heart. The exudate is best treated after three or four weeks by diathermy and later with the high frequency current.

Placenta Prævia.

L. KRAUL (*Wiener Medizinische Wochenschrift*, February 26, 1927) states that in the last 15,178 deliveries at the First Clinic at Vienna there were one hundred cases of *placenta prævia*, an incidence of 0·66%. Central *placenta prævia* was noted seventeen times, marginal thirty and lateral fifty-three times. There were twenty-four *primiparæ* and seventy-six *multiparæ*. Four of the latter had had a similar condition on a previous occasion. A history of abortion, inflammation or sepsis at previous confinements was obtained in thirty-two instances. Of the seventeen patients with central *placenta prævia* the majority were delivered by podalic version, four had a bag inserted prior to version. Two Cæsarean sections were performed, one being a Cæsarean hysterectomy. No maternal deaths occurred, but only with Cæsarean section were children born alive. The thirty patients with marginal *placenta prævia* were treated with the bag and version. One mother died from sepsis and ten children were born alive. Lateral *placenta prævia* was treated as follows: spontaneous delivery in twenty cases, rupture of membranes in eight, version in fifteen, extraction of breech in three, insertion of bag in three and forceps, Cæsarean section and craniotomy were each used in one case. Two mothers died and thirty-six out of fifty-three children were born alive. The author considers that version is the most suitable method for the majority of complete and partial cases of *placenta prævia*. No hæmorrhage followed this procedure in sixty-three cases. Three Cæsarean sections were performed on elderly *primiparæ* with large children. Two of these became septic and one developed a thrombophlebitis. The bag was mainly used to control severe hæmorrhage when the *os* was not sufficiently dilated to permit version. The author warns against the danger of rapid delivery after the use of the bag or version. *Post partum* hæmorrhage occurred in twenty-four patients and in four was due to cervical lacerations requiring repair. The remainder were suffering from atonic hæmorrhage and the placenta had to be manually removed fifteen times. Ten patients required intravenous or subcutaneous saline injections and one received a blood transfusion. A history of recurrent hæmorrhage during pregnancy was obtained in 80%. Twenty-two patients were morbid during the puerperium. Two had eclamptic fits during delivery. The fœtal mortality of the series was 54%, while ten others died shortly after birth. Although version does not favour the child, fifty-one out of sixty-three were born alive and five of these died shortly afterwards. More than half of the children were premature. The presentations noted were: vertex sixty-nine, transverse nineteen and breech twelve. Prolapse of the cord occurred in two instances.

The Treatment of Prolonged First Stage.

B. ASHNER (*Wiener Medizinische Wochenschrift*, March 26, 1927) deals with treatment of patients when despite good uterine contractions dilatation of the cervix remains slow. He asserts that the traditional advice to "keep your hands in your pockets" is not correct. The majority of these contractions are due not to any pelvic contraction, but to rigidity of the soft parts. Therefore he employs manual dilatation of the cervix whenever it does not dilate rapidly. No patient was left for more than twenty-four hours in the first stage. He ridicules the fear of cervical laceration, provided that dilatation be not carried beyond four fingers and states that no sepsis has occurred in a series of five hundred patients so treated. Following dilatation he uses small doses of pituitary extract and more recently "Thymophysin" which is a combination of pituitary and thymus glands reputed to lessen the risk of uterine tetany. Dilatation should be repeated if this fails. By this method he has had uniform success and has never been forced to apply forceps while the head is above the brim, as is frequently done in association with cervical incisions. He is not in favour of the technique of Potter in every case, but agrees with a saying of Baudelocque that "the best obstetrical instrument is the hand."

Narcosis in Childbirth.

O. PANKOW (*Deutsche Medizinische Wochenschrift*, September 17, 1926) summarizes his experiences with various methods of producing analgesia during child-birth. He considers that some form of anæsthesia is essential to prevent the misuse of forceps. Good results follow the use of ethyl chloride at the end of the second stage of labour. He has had no experience with lumbar and sacral anæsthesia. Hypnosis has given good results, provided the patient was prepared for labour by several hypnotic sittings during the last weeks of pregnancy. Morphine and scopolamine have been very useful. Care must be taken to prevent the patient from wandering about, if she is restless and the thirst which is frequently present, must be alleviated by lavage of the mouth. In common with other observers the author considers that both primary and secondary forms of inertia are more common at present as compared with prewar days. Therefore it is more difficult to obtain good results from morphine-scopolamine narcosis and frequently the contractions have to be stimulated by quinine or pituitary extract. While many of the children have been born in a condition of oligo-apnœa, this soon disappears and need cause no alarm. The author has not been successful with Gwathmey's synergistic method. Many patients were very restless and even maniacal. In some severe intestinal hæmorrhage followed the rectal instillations employed in this method. A preparation of veronal called "Somnifen" has been used intravenously in one hundred and twenty cases. Two cubic centimetres are injected when the *os* admits three fingers in a *primipara* or when labour starts with *multiparæ*. This is repeated every hour until a maximum of eight cubic centimetres has been given. Full analgesia is generally obtained, but amnesia is incomplete. There was no undue prolongation of the third stage. Patients are liable to sleep soundly for twenty-four to forty-eight hours after delivery and have to be watched, lest they get out of bed looking for a drink of water. The children have never been born in asphyxia. "Narcylen" and oxygen in equal amounts have been used in two hundred and thirty cases. Its action is quick, there is no fear of atony and no after effects have been noted. The unpleasant odour of acetylene should be disguised by a few drops of *eau de cologne* on the mask. Postanæsthetic vomiting is uncommon and a much lesser degree than that following chloroform or ether narcosis. There is no effect on the child. Unfortunately owing to risks of explosion its use should for the present be confined to hospitals. The author considers that "Narcylene" promises to be the best method of producing analgesia yet evolved.

Pulmonary Tuberculosis and Pregnancy.

M. WEINBERGER (*Wiener Medizinische Wochenschrift*, September 4, 1926) discusses the indications for interruptions of pregnancy in the presence of pulmonary tuberculosis. Patients with latent and inactive tuberculosis should be allowed to proceed to term, because at least 80% are unaffected by the pregnancy. The statistics of active cases show that only 20% of patients at most are unaffected and if pregnancy be interrupted, at least 70% can be cured. Induction of abortion should be done not later than the fourth month, if a reasonable number of cures is desired.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on March 4, 1927, in conjunction with the Brisbane Division of The Institution of Engineers, Australia, at the rooms of the latter, Empire Chambers, Wharf Street, Brisbane.

MR. J. R. KEMP, the Chairman of The Institution of Engineers, Australia, occupied the chair and in the presence of about one hundred members of both bodies presented the Peter Nicol Russell Memorial Medal to Mr. R. E. Sexton. Mr. Kemp then welcomed the members of the Queensland Branch of the British Medical Association to the combined meeting and invited Dr. H. V. Foxton President of the Branch, to take the chair and to preside over the joint meeting.

DR. H. V. FOXTON responded on behalf of the Branch and thanked Mr. Kemp for the opportunity given to members of the Branch of being present at the joint meeting of engineers and medical men, a unique and important occasion for both. He said also that he was very pleased to be present at the presentation made to Mr. R. E. Sexton, whom he wished to congratulate. He hoped that much good would come out of the joint meeting and characterized it as a very good sign. Dr. H. V. Foxton then took the chair.

Cooperation Between Medical Practitioners and Engineers in Industry.

MR. J. S. JUST (M.I.E.Aust.) read a paper entitled: "A Plea for Greater Cooperation between the Sciences of Medicine and Engineering in Relation to Industries" (see page 2).

DR. H. W. TILLING was eager to congratulate Mr. Just on his excellent address which could not fail to be of great interest to those present. He thought that Mr. Just's paper showed clearly the intimate relationship existing between engineering and medicine on the industrial side and he considered that there was urgent need for greater cooperation between the two professions in order to obtain maximum industrial efficiency. He agreed entirely with the principles enunciated by Mr. Just, but would go even further and suggest that, as all scientific and commercial bodies generally were involved in industrial health problems, they should all cooperate with the medical profession in an effort to reduce economic waste and to protect and improve the health of the worker as well as that of the community generally. It was impossible, he said, to exaggerate the importance of industrial health. Industrial medicine and hygiene covered a very wide field and their scope was almost unlimited. Upon their practical application depended to a large extent the health of the worker and so consequently the efficiency of his work and the ultimate beneficial effects accruing to the whole community. The worker's better health and better working conditions meant much to both the employee and the employer and should tend to promote happier relations between them. He hoped the time would soon come when every employer would employ also the service of medical men, trained and instructed in industrial hygiene, to advise and direct the important medical side of his business. Such a course would inevitably result in increased efficiency and greater happiness and would ultimately make for greater prosperity and content in the State. He regarded the meeting as the sign and beginning of much greater things in the realm of industrial medicine and hygiene and thought it would be a great pity if the intentions of the meeting were abortive or were allowed to subside through apathy. He said he would like with the President's premission to bring forward a resolution or recommendation to form a body comprising representatives of the Queensland Branch of the British Medical Association, scientific and commercial bodies together with representatives of the workers and the Government, for the purpose of discussing and advising on health matters in connexion with industry, as well as those of communal importance. Regarding Mr. Just's reference to the suspicions existing between employer and employee proving detrimental, he thought that this tendency could be overcome somewhat by the inclusion of a representative of the Trades and Labour Council. He suggested in his resolution a Government representative also so as to keep in touch with Government departments and to assist and advise in the matter of additions to or modifications of existing legislation. Dr. Tilling then asked subsequent speakers to consider the resolution he was about to move, and discuss it before it was put to the meeting. He then formally moved:

> That in the opinion of this meeting, a body of not more than twelve members be formed, consisting of representatives of the British Medical Association (Queensland Branch) and scientific and commercial bodies, together with representatives of the Government and the Trades and Labour Council, for the purpose of discussing, and advising on, health matters of comumnal importance and those more particularly relating to industrial medicine and hygiene.
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> Further, that a committee be formed of representatives of the British Medical Association (Queensland Branch) and of The Institution of Engineers, Australia, to discuss the details in connexion with the formation of such a body.

MR. R. E. SEXTON (The Institution of Engineers, Australia) was also anxious to congratulate Mr. Just on his very able paper. Working separately, he said, both the medical and engineering professions had done much and worked hard for humanity's benefit and sometimes they had cooperated (to wit, in the construction of the Panama Canal) for the public good. Medicine had often helped engineering in many ways and quite a number of big engineering and constructional concerns had installed medical officers, often thus making the difference between profit and loss. He quoted some examples of this, but thought that the cooperation should be increased and extended In the days of keen competition these matters were of paramount importance, making as they did for increased economic and industrial efficiency. He was desirous of being permitted to second Dr. Tilling's motion which he heartily endorsed. He then dealt with the alleged possibility of friction between employer and employee and thought that Dr. Tilling's motion, if carried and effected, would obviate this.

DR. S. F. MCDONALD concurred with the opinion of previous speakers in regard to the formation of a body of experts. He asked, however, that in carrying out the work of the expert body the same scientific methods be adopted and employed as were done in the best medical work and scientific research. He quoted the glorious example of the work done in the discovery of "Insulin" and also Jenner's experimental work in the matter of small-pox and vaccination. He mentioned also the great opposition and fury such great men and their discoveries usually provoked. He drew a picture of how much better industry and things in general would be if the scientific method were adopted throughout. He praised methods of trial and experiment and deplored their lack in the usual industrial conditions. The experimental method in his opinion was to be recommended in almost every department of practical and industrial life. He went on to say that the more a doctor dealt with men and women, the more he really felt he was in intimate touch with humanity; the personal touch was the most important thing in the relation of the doctor to his patients. He then briefly discussed the important question of the mental state or attitude of the worker, a thing to which Mr. Just in his splendid address had hardly referred. He urged that the mentality of the worker should be influenced to make him work better and to give him a better incentive to work. Often new methods, mechanical improvements *et cetera* were apt to cause much resentment, suspicion and actual opposition among employees. Anything worth while could be accomplished only in an atmosphere of absolute confidence, as between employers and employees. In conclusion and to sum up his ideas on the matter, he insisted that the problems of industrial medicine should be faced and solved, as all other medical matters and problems, in the true scientific spirit and with really scientific methods and that the most important aspect of industrial

hygiene was the mental attitude of those concerned and the spirit of confidence existing between both parties, begotten by mutual sympathy and understanding.

MR. R. M. WILSON (The Institution of Engineers, Australia) thought that Mr. Just's paper was rather limited in its ambit, referring as it did only to actual industrial life. He would go much further and would apply cooperative methods to many other aspects of communal life, such as city and town planning and all other phases of civic and general domestic life. In this regard the help and cooperation of the architect was also very necessary. He then instanced the lack of unanimity on many such matters as the ideal home for the Queensland climate, methods of refrigeration *et cetera*. He thought that it was most necessary to prosecute all such inquiries along strictly scientific lines. At present, there was far too much conflicting disparity of opinion. He then referred to two or three rather important details in building and construction pertaining to health, such as the position of lavatories, garages *et cetera*. He also mentioned the important matters of illumination and food preservation and was of the opinion that in these matters there was room for much work by disinterested people.

DR. A. T. NISBET added his quota of congratulations to Mr. Just on his stimulating paper and referred to one or two further points. Regarding dust, silica *et cetera* and their effects on miners' lungs, he said he had attended a health conference at Bristol, which demonstrated to him the mental attitude of the average miner. The miners had preferred to stick to the old system and go on inhaling dust rather than accept the newer and more scientific methods introduced on their behalf. From Dr. Nisbet's observations miners' families were very prone to tuberculosis, as also were girls employed in city offices. The reasons were in both cases the shocking conditions under which they lived and had to work. He doubted the alleged efficacy of vacuum cleaners. He then referred to the question of the regular outbreak of nose and ear trouble during the swimming season. He went on to say that he noticed that Mr. Just had wisely refrained from mentioning the important matter of smoke. He wanted to know whether the engineer could not do something to alleviate the smoke nuisance. He also cavilled at the very imperfect type of septic tank in use around the city of Brisbane.

Referring then to the action of electric currents, Dr. Nisbet mentioned one or two interesting personal experiences with high voltage currents. Apparently, he thought, the two chief factors concerned in the cause of death from electric currents were arrest of respiration paralysis of the respiratory centre and overthrow of heart due to fibrillary action. *Post mortem* there was no evidence of visceral or vascular congestion. These were the findings of a big section of investigators in England. He then mentioned the absolute fatigue and drowsiness which followed often on a life spent for the most part in an electric atmosphere.

CAPTAIN PIKE thanked Mr. Just for his interesting address. The problem of industrial hygiene, as related both to the medical and engineering sciences, was one of great magnitude and involved many phases of civil and economic life. He commended for inspection the excellent conditions obtaining at the big Ford Works at Eagle Farm, Brisbane. These conditions proved why the American was a better industrialist and producer than the Anglo-Saxon, the working conditions he provided for his workers being so superior. He considered that national insurance would be a factor in helping on the good work and stressed the importance of education and instruction (especially on the electrical side) of all members of the community. He instanced one or two recent events, which had happened in Brisbane and which gave evidence of the appalling ignorance on matters electrical on the part of the public.

PROFESSOR J. P. LOWSON called attention to an aspect of the subject not yet mentioned. Industrial conditions were of two kinds, namely those outside and those inside the worker. He wished to suggest that there was also an intermediate zone, dealing with what he called the physiology of industrial work or the functional side of industry. This had to do with the various ways and methods of actually doing things known as motion study The practical results of motion study were quite extraordinary. Another thing on which much work had also been done was the important matter of fatigue. This was rather a complicated problem, as it was hard sometimes to tell whether a man was fatigued or not. In this regard, however, the study of the correct physiology was very important and this led often to a reduction of fatigue. Another important aspect of the matter was what was called vocational selection, which meant simply the determination of what kinds of mind and body were best suited for different kinds of work. Important work was being done in these directions and he wished to bring these aspects under the attention of the meeting. So much had been said on the mental attitude of the employee; he was eager to mention also and not to overlook the mental attitude of some employers. In conclusion he recommended what he considered an excellent book on the subject of industrial psychology, namely "Mind and Work" by Dr. Meyers.

MR. PATRICK referred to some conditions under which the engineer was to blame for keeping the worker unfit. He quoted some examples and stated that he had come to the conclusion that they were raising in Queensland physically weak men who "sat on the job."

PROFESSOR R. W. HAWKEN (The Institution of Engineers, Australia) thought that the most satisfactory aspect of the whole business was that the medical practitioner was at last beginning to educate the public and he considered this a very good and most desirable thing. He quoted one or two examples of the value of a little medical instruction and knowledge. He was very glad that the medical man was taking his part in the dissemination of such information.

MR. H. EKLUND congratulated Mr. Just on his interesting and important conribution. Hitherto, unfortunately, public opinion had been moulded and directed by politicians and not by experts, as it should be. He then put in a special plea for the worker who could be got to do exactly what was wanted, if only tact and sympathy were used and if it was known how to engender his confidence. He also mentioned motion study and the very desirable avoidance of fatigue. These things must on no account be confused by the worker with "speeding up" and ultimately the worker must understand and realize that these things were meant for his benefit and not for his detriment. Employers should endeavour by all possible means to secure and keep the confidence of the employees. He would like to support warmly Dr. Tilling's motion which, if carried, should be productive of much good to the community. Referring to motion study, he said that this might easily mean the difference between the life and death of an industry. He then mentioned the important question of sanitation and its value when associated with practical engineering. He spoke of a machine someone had devised recently to induce artificial respiration after electric shock.

MR. J. B. HENDERSON was also eager to congratulate the engineers on promulgating and introducing the subject to the combined meeting. He thought that they had plenty of knowledge on which to work; it was the lack of application of this knowledge that was responsible for most of their troubles. Research was certainly necessary, but much good work could be done withtout further research simply by the application of present knowledge.

MR. E. J. LORD also joined in thanking and congratulating Mr. Just. He referred to the practical difficulty of making people carry out and conform to regulations when they were once made.

DR. W. N. ROBERTSON congratulated Mr. Just and praised the way in which the meeting had been organized. He referred to a suggestion of teaching the medical student industrial hygiene. Another important point was how large factories *et cetera* could be helped by medical men. The medical practitioner, he thought, could be of great help in this regard and doctors should be trained further in industrial hygiene and medicine with much advantage both to the worker and the community.

DR. E. S. MEYERS added his praise and thought Mr. Just had a wonderful knowledge of the medical aspect of the case. He emphasized the important question of minor accidents and their treatment and also mentioned in passing the relation of diet and industry and the question of

wastage in industry. The recent war was perhaps the best example of applied hygiene and he did not know why the same state of affairs should not obtain in civil life and under civil conditions. He thanked Mr. Just and the other speakers.

MR. J. R. KEMP said that he was very pleased and grateful to Dr. Foxton for presiding over the combined meeting. He considered the meeting rather unique and thought Dr. Foxton and his colleagues were largely responsible for its success. He would suggest to any committee appointed as a result of the meeting that a list of subjects of immediate importance should be drawn up at first for discussion and treatment. He then asked for a vote of thanks to Dr. H. V. Foxton.

This vote of thanks was then carried by acclamation.

DR. H. V. FOXTON then responded and thought that such a meeting was an excellent idea and to his mind represented a fresh *point de départ*, leading, he felt sure, to something good, definite and tangible in the future. He then put the motion, already proposed by Dr. Tilling and seconded by Mr. Sexton, to the meeting. The motion was carried unanimously.

MR. J. S. JUST in reply said he was more than satisfied with the discussion which his address had provoked and that the outcome of the meeting and the carrying of Dr. Tilling's motion could conduce only to much good and general benefit. He was exceedingly pleased with Dr. Tilling's motion which was also his own idea, expressed splendidly by Dr. Tilling. With regard to Dr. Nisbet's question of fatigue following on electrical work he associated the sensations mentioned by Dr. Nisbet with the regular and continuous hum or noise proceeding from alternating electrical energy. This might be the reason or perhaps the sensations might be due to the electrical stresses set up by the current in the surrounding atmosphere. It was an exceedingly interesting point. He wanted in conclusion to thank those present for their interest and appreciation and said that The Institution of Engineers, Australia, was indebted to the Queensland Branch of the British Medical Association for the unqualified success of the combined meeting. Working conjointly he felt sure that these two important scientific bodies would be able to do much for the public benefit and the general good.

DR. D. G. CROLL then asked the meeting to carry a hearty vote of thanks to Mr. Just for his paper. This was done by acclamation.

A MEETING OF THE SECTION OF OTO-RHINO-LARYNGOLOGY of the New South Wales Branch of the British Medical Association was held in the B.M.A. Building, Elizabeth Street, Sydney, on December 8, 1926, DR. CHAS. WARREN, the President, in the chair.

Acute Mastoiditis.

DR. H. SEAWARD MARSH read a paper entitled: "The Operation for Acute Mastoiditis and Its After Treatment" (see page 13).

DR. A. J. BRADY in complimenting Dr. Marsh on his paper stated that he was in agreement with the radical procedures advocated. He thought that damage would too often result through conservative treatment. With regard to treatment he had used Schwartze's operation, but was never satisfied until he had washed right through the middle ear from the mastoid wound.

Dr. Brady traced the history of the mastoid operation and referred to Zaufal's operation the principles of which were much as in the radical operation practised by Dr. Marsh. He approved of getting rid of all *débris*, clots and bits of bone with hot saline solution. In chiselling away the outer wall of the attic it was advisable to insert a buffer of gauze in the attic to protect the underlying structures. Referring to methods of after-treatment he disapproved of the blood clot method and regarded it as a fad. There was always the danger of sepsis. In any event it presented no advantage over the method described by Dr. Marsh.

Dr. Brady asked Dr. Marsh whether he would remove bone down to the root of the zygoma.

DR. VERGE felt that Dr. Marsh would have helped discussion if he had defined the extent of the disease before he spoke on the operation suitable for this amount of disease. Stress should be laid on paracentesis as attention often obviated a mastoid operation. He had known of remarkable cures without operation even when it had been thought necessary. Conservative opening of the mastoid appealed to him, but he would certainly advocate paracentesis first.

The time of healing had been stated at from four to six weeks. This depended entirely upon the amount of diseased bone. He cleared this out until healthy tissue was reached and thought it had much to do with healing which he had in some cases seen occur in two to three weeks. In speaking of the scar Dr. Verge advocated the insertion of one or two stitches in the upper part of the wound, the one incision and the removal of bone had been extensive. He thought that if these stitches were put in, there would be a less unsightly scar. The blood clot method held no appeal for him as a surgical procedure.

DR. W. R. BEAVIS remarked that no mention had been made of the removal of adenoids. In cases of mastoiditis they were nearly always present and were a source of infection of the postnasal space, the middle ear and the mastoid. If adenoids were removed the cause was removed. He would not advise the enucleation of the tonsils at the same time

He did not agree with Dr. Marsh that no syringing of the meatus and mastoid should be allowed. He could see no harm in it if the cavity were carefully dried afterwards. A modified blood clot method appealed to him. The wound was sewn up except at the bottom and a tube inserted to the antrum and windows made. To his mind a postauricular depression was not a disadvantage. He had found that ionization applied to the cavity helped considerably in closing it.

DR. HUFF JOHNSTON was in accord with Dr. Brady's treatment without, however, going into the antrum with the chisel which he considered unsafe. He regarded the antrum as the source and having reached the antrum would trace the infection from that point. Weil's incision which he had seen in London was alone not wise unless the infection was confined to the periosteum. But this of course would not be a case of acute mastoiditis.

He mentioned a patient at the Coast Hospital. The disease had been so extensive that the facial nerve was exposed in the face of the wound. He would like to know the best method dealing with such a case.

The blood clot method was productive of good results. In his experience it was satisfactory and reduced the time of healing. Moreover this method made the wound easy of reopening if necessary. By using bismuth-iodoform and paraffin waste (B.I.P.P.) packed moderately firmly rapid healing could be effected.

DR. RICHARD FRANCIS thought it a good point to endeavour from the history to obtain an idea of the nature of the infection and the type of lesion expected to be found. Acute mastoiditis meant rapid and extensive bone destruction and complete exenteration of all cells was necessary. In sudden onsets with a short history it was difficult to get down to solid bone. He considered it safer in such cases to establish drainage and clean up afterwards. In an acute exacerbation of chronic mastoiditis the septic focus was usually confined to the antrum. In these circumstances it was possible to remove all diseased tissues and the wound would heal more quickly being smaller in extent. He favoured the use of Heath's blower when the aditus was exposed. He could not see that any harm could result by this method, in fact he thought it less likely to cause harmful results than the syringing of fluids already mentioned.

DR. CHAS. WARREN remarked that whenever the operation for acute mastoiditis was mentioned he always thought of the words of Dan McKenzie that every mastoid operation was an operation of discovery. He recalled a case of a colleague of his. A child was admitted with all the symptoms of acute mastoiditis. At operation very little pus was found and the wound was closed up. It healed in a week or so. The patient later suddenly developed coma and died: *Post mortem* examination revealed a temporo-

sphenoidal abscess. The operation had not gone far enough. He did not favour the use of iodoform gauze but preferred to use bismuth gauze not heavily impregnated. The operation was not one for conservatism.

Referring to the blood clot method of after treatment he had seen only two cases. In the one the result was good, in the other the wound sloughed. The principle did not appeal to him.

DR. G. HALLORAN considered the operation should be performed with an eye to the complications and being so, he supported the radical school which Dr. Marsh advocated. He doubted whether operation on conservative lines had any advantages. In considering the operation there were two main considerations to be borne in mind. Firstly the possibility of perisinus abscess and involvement of the tip cell, secondly in rare cases pneumatization might extend right to the tip of the squamous pyramid. Involvement of the sixth nerve in Dorello's canal proved this, but it would seem technically impossible in such cases to follow the cells so far. In the after treatment in addition to packing the wound with plain gauze, he packed the aural meatus to the very last, thereby insuring a widely open meatus.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at Saint Vincent's Hospital, Sydney, on May 12, 1927, DR. F. BROWN CRAIG, the Acting President, in the chair. The meeting took the form of a series of clinical demonstrations by members of the Honorary Staff.

Eye Conditions.

DR. F. GUY ANTILL POCKLEY showed several patients from the ophthalmic branch of the Outdoor Department. The conditions demonstrated included *retinitis proliferans*, *leontiasis ossea* of the upper jaw with a veil over the vessels of the optic disc, detachment of the chorioid, disseminated chorioiditis, myopic chorioiditis and several unusual forms of opacity of the vitreous.

Cerebral Tumour.

DR. H. H. BULLMORE, DR. D. CAHALAN and DR. L. UTZ reported a case of cerebral tumour. The patient, an unmarried woman, fifty-three years of age, had been engaged in the fur trade for thirty years. She had first sought advice in April, 1927, and had complained of something coming up into her throat and going back again and making her feel sick. She had said that this feeling was similar to that produced by the fumes of ether. She had not vomited. Her previous history had been good. She had not consulted a doctor for twenty-six years; at this time appendicitis had been suspected. She had suffered from no serious illness and had undergone no surgical operation. The bowels had acted regularly and no urinary symptoms had been present. Menstruation had ceased eight years previously; the patient had had a lot of worry connected with her work. Examination had revealed a woman of stout build. The mouth was clean and the teeth were artificial. The pupils had been equal and reacted to light and the knee jerks were normal. Examination of the heart had revealed a regular rhythm, but the tone suggested a flabby condition of the musculature, the systolic blood pressure being 180 to 190 millimetres of mercury and the diastolic pressure 100 millimetres. No abnormality had been found on palpation of the abdomen. The specific gravity of the urine had been 1010 and it contained a trace of albumin and pus, but no sugar. Four days later her sister had reported that the patient mixed her words and occasionally asked strange questions. On the following day she had appeared preoccupied and had been advised to give up her work for six months. A few days later she had complained of headache and had referred to the left side of the occipital region and running down towards the neck. On April 14, 1927, vomiting had occurred for the first time after the administration of a saline aperient. On this day the urine was normal and examination revealed some paresis of the right side. The left knee jerk and plantar reflex had been exaggerated and the response to tests on the right side were difficult to elicit. Subsequently the headache and vomiting had ceased, but the patient became drowsy and on April 16 she appeared to be almost comatose. At this time it had appeared that the condition might be due either to a vascular lesion, a cerebral tumour or to *encephalitis lethargica*. On the following day, however, considerable improvement had taken place and the patient was able to speak to and recognize her friends. The improvement had not lasted and the patient again became drowsy and suffered from a recurrence of vomiting. After a further improvement it had been noticed on April 23 that the patient could not take her food and her appearance was typical of hemiplegia. On April 25 the patient had been transferred to hospital and she was able to understand all that was said about the transfer.

The patient had been in a comatose condition on her arrival in hospital. The coma had gradually deepened. The observations that it had been possible to make, had not been of any assistance in establishing a diagnosis. Muscle rigidity of the right arm and leg had been present and there had been very little difference in the deep reflexes which were active on both sides. The systolic blood pressure had been 160 and the diastolic pressure 65 millimetres of mercury. The blood urea had been estimated as 70 milligrammes per hundred cbuic centimetres of blood. Two leucocytes had been found in each field together with many red blood cells on examination of the cerebro-spinal fluid. Unfortunately the optic discs had not been examined. The case was of interest as showing the amount of "insult" which the brain would tolerate without showing signs of irritation. It had to be assumed that the growth had been gradual and that cerebral symptoms had not become evident until the hæmorrhage or more likely the repeated hæmorrhages occurred. This had eventually caused the hemiplegia, compression and death.

At *post mortem* examination the external appearances of the brain had been normal. A large tumour, spherical in shape and the size of a hen's egg, had occupied the greater portion of the frontal area of the left cerebrum. If the left cerebrum had been divided sagittally into three equal parts, the tumour would have almost completely occupied the most anterior part. The edges were undefined and there was associated with the tumour a pronounced inflammatory and hæmorrhagic reaction. The internal capsule formed the centre of the tumour. Sections revealed a cellular new growth, the cells being gliomatous in type. The picture was one of a very cellular glioma.

Goître.

DR. M. O'GORMAN HUGHES discussed the effect of the administration of "Lugol" before operation and read the notes of two patients suffering from typical acute hyperthyreoidism. The first patient had been treated by rest and the administration of potassium bromide for ten days. The second patient had been treated by the administration of "Lugol" in doses of 0·6 mil (ten minims) three times a day for ten days and the patient had been confined to bed. The pulse rate of the first patient on admission to hospital had been 130 in the minute; after ten days' treatment the pulse rate had been 110 and the average pulse rate for the first three days after operation had been 123. The maximum temperature after operation had been 39·6° C. (103·4° F.). The pulse rate of the second patient on admission to hospital had been 136 in the minute; after ten days' treatment the pulse rate had been 88 and the average pulse rate for the first three days after operation had been 105. The maximum temperature after operation had been 38·3° C. (101° F.).

Malignant Disease of the Urethra.

DR. F. A. MAGUIRE showed a female patient who had been treated for malignant disease of the urethra by diathermy and the transplantation of the ureters into the rectum. The report of this case is published in this issue at page 19.

Paget's Disease of the Skull.

DR. D. CAHALAN showed a patient who was suffering from Paget's disease of the skull. This case will be reported in full in a subsequent issue.

Mongolism with Signs of Cretinism.

DR. J. E. SHERWOOD showed a child aged three years. When the child was three months old the mother had been told that it suffered from "brain trouble." The child had a cousin apparently suffering from the same complaint. The father suffered from pulmonary tuberculosis. The mother had had one child born previously which lived for only three hours. The birth of the patient had been normal. At birth he had weighed 3·4 kilograms (seven and a half pounds). At the time of demonstration he weighed 11·25 kilograms (twenty-five pounds) and had been gaining in weight particularly during the last six months. His length was 61·25 centimetres (twenty-eight and a half inches) and the largest circumference of his head was 45 centimetres (eighteen inches). He had cut his first tooth at three months of age and first held his head up when eighteen months old. He had not been able to sit up until he was eighteen months old and had been unable to crawl until he was over two years of age. At the time of demonstration he was unable to walk without assistance and his whole vocabulary consisted in "da da." He had suffered from numerous illnesses since then, gastro-enteritis, bronchitis *et cetera*. Apparently he had received intermittent and desultory thyreoid medication since he was three months old.

On examination the most noticeable feature was an extreme generalized pallor. The face was puffy below the eyes. The tongue protruded and the child snorted and wheezed frequently. The bridge of the nose was depressed and the remainder of the nose was somewhat flattened. The hair was dry and the anterior fontanelle was patent. The eyes were slit-like, slanting and somewhat approximated. The fingers of both hands were short and stumpy with slightly squared tips, the fifth finger in each hand being considerably short. There was some laxity of the ligaments of the joint of both upper and lower limbs. The abdomen was protuberant and an umbilical hernia was present. Neither the Wassermann test when applied to the blood nor the von Pirquet test had yielded a reaction.

Dr. Sherwood pointed out that the diagnosis rested between mongolism, cretinism and achondroplasia. The absence of any shortening of the proximal segments of the limbs and of the "trident" hand *et cetera* excluded the condition of achondroplasia. His backwardness and physical appearance suggested an element of cretinism. The presence of lax ligaments of the lower limb joints, the history of recurrent inflammation of mucous membrane, the shortened fifth finger of each hand and the slit-like eyes seemed to demand the label of mongolism, as also did his failure to respond to thyreoid medication.

Mental Deficiencies with Slight Achondroplasia.

Dr. Sherwood also showed a child, aged ten months, who had been brought to hospital because the mother had noticed that it was unable to sit up or to use its feet and that it had a vacant expression. The mother had three other children, all of whom were well. One child had died of meningitis, the father had tuberculosis, but the mother was healthy. The child's birth had been normal and it had weighed 3·8 kilograms (eight and a half pounds). It was breast fed and at the time of the meeting weighed about 7·4 kilograms (sixteen and a half pounds). Its length was 67·5 centimetres (twenty-seven inches) and the largest circumference of the head was 40 centimetres (sixteen inches). No teeth had been cut. The child was just commencing to hold up its head, it was unable to sit up unaided, unable to crawl and unable to speak. It had suffered from bronchopneumonia. On examination it was seen that the mouth was slightly open and that the tongue protruded. An internal strabismus was occasionally noticeable in each eye, more often on the left than on the right side. The anterior fontanelle was patent. The fingers of both hands radiated and were separated by an interval. There was laxity of the ligaments in the joints of both upper and lower limbs and the feet could be placed at the back of the neck with ease. The proximal segments of both upper and lower limbs were slightly shortened and the abdomen was sometimes protuberant.

Dr. Sherwood said that he had not described the child as suffering from pronounced achondroplasia, because the limbs were not sufficiently shortened in comparison with the trunk and because he was cutting his teeth late, was walking late and had a vacant expression. These with the other signs of backwardness suggested a condition of mental deficiency rather than one of achondroplasia.

Osteoarthritis of the Knee Joint.

DR. D. J. GLISSAN'S first patient was a male, aged fifty-seven years, who had sought relief for severe and continuous pain of two years' duration in the right knee joint. He had had various forms of treatment at different hospitals without relief.

Examination had revealed a pronounced degree of osteo-arthritis affecting the right knee joint. The left knee joint was free from signs of the disease. The patient had looked ill as the result of loss of sleep through continuous pain.

Operation had been performed on November 16, 1926. A ten centimetre (four inch) graft had been cut from the front of the right tibia. The knee joint had been opened by a curved incision below the patella. All articular cartilage had been removed from the articulating surfaces of the femur, tibia and patella. A bed had been cut in the tibia and femur for the graft. The latter had been placed and retained in position by sutures of kangaroo tendon. The wound had been closed and the limb put up in plaster from hip to toes in the position of slight flexion. The patient had been discharged from hospital still wearing his cast on January 13, 1927. The plaster had been removed a month later.

Bony ankylosis was well established and all pain had disappeared. The patient walked well and painlessly. There was still a trace of swelling about the foot consequent on the long immobilization in plaster.

Dr. Glissan pointed out that in cases of this type in which continuous severe pain was a feature, arthrodesis in a good functional position offered the patient the best chance of relief and gave him a useful limb. With regard to the position of the limb, he held that one of slight flexion at the knee joint gave a more useful result than one in which full extension was sought. In the latter case the patient walked heavily on the heel and in a heavy person the continuous shock to which this subjected the hip and sacro-iliac joints, was liable to cause pain at these joints. A position of flexion reversed the normal sequence in walking and tended to make the patient walk on the toes and to take the thrust through the spring of the foot, thus sparing the hip and sacro-iliac joints.

Arthroplasty of the Hip Joint.

Dr. Glissan's next patient was a female, aged eighteen years. At four years of age she had suffered from bilateral tuberculous disease of the hip joints. She had been seen originally by Dr. Glissan at the age of fifteen years. At that time she had been in very poor physical condition. Both hips were the seat of bony ankylosis. Flexion-adduction deformity had been present on both sides; the right thigh was crossed in front of the left so that the patient walked with a scissors gait. X ray examination had revealed in addition to total obliteration of each joint, a calcified cold abscess on each side. These were pear-shaped and tracked down in the adductor planes. That on the left was well defined, whilst the apex of the right abscess was ill-defined.

At that time Dr. Glissan had feared to undertake any operation on the joints in view of the patient's poor general condition and the presence of the abscess cavities. A cuneiform osteotomy had been performed at the level of the lesser trochanter, the limb had been placed in a position of moderate abduction and slight flexion and retained there in a plaster spica extending from the thorax to the toes.

The patient as a result was a great deal more comfortable, was able to get about well and rapidly improved in her physical condition.

In 1926 it had been judged safe to operate upon the left hip. The joint had been exposed by a Smith-Petersen incision on August 17, 1926. A groove had been cut along the line of the former joint and deepened and shaped so as to separate the head from the acetabulum, leaving the

one rounded and the other cup shaped. The bony surfaces had been shaped to fit as accurately as possible, leaving a sufficient gap to insure free movement.

A further incision along the outer side of the thigh had then been made and the *fascia lata* exposed and cleared of fat over an area sufficient to cover the newly fashioned femoral head. This area had then been removed and placed over the head, being stitched by interrupted sutures to the soft tissues about the neck of the femur. The remains of the capsule were then sutured and the wounds closed. The limb had been put up in the position of extension and full abduction and retained by a plaster spica from axilla to toes.

On September 16, 1926, the plaster had been "bivalved" and reeducation of the flexors and extensors commenced. Assisted active movements had been carried out and the patient was taught to control muscles whose function had been in abeyance for fourteen years.

The patient had been allowed up in a walking calliper on October 11, 1926, and discharged to the Out-patient Orthopædic Clinic, where her treatment was continued.

At the time of demonstration she had free voluntary range of flexion to about 70°, abduction to 45°, full extension and free rotation, both internal and external. Her range of passive movement was a little more in each plane and she was rapidly gaining strength in all muscle groups.

She walked painlessly on a firm hip joint. The degree of actual shortening was 12 millimetres (half an inch), but owing to the fixation of the opposite joint in a position of abduction there was on this side relative lengthening of two and a half centimetres (one inch) which had to be compensated for on the side of the arthroplasty by a raised heel and sole.

Plastic Operation on the Hand.

Dr. Glissan's next patient was a young man, aged twenty-four years, who some three years previously had fallen across an electrical wire and sustained very severe burns. One hand had been amputated above the wrist whilst very severe damage had been sustained in the elbow region on the other side.

The patient had come under Dr. Glissan's care after being discharged from hospital. He had presented a typical picture of ischæmic paralysis of the remaining hand. Treatment had been undertaken with a view to stretching the contracted tendons of the flexors of the fingers and wrist. After some months of splinting the fingers had been extended to a useful degree at the interphalangeal joints and the wrist joint had been brought to a degree of voluntary dorsiflexion sufficient to conserve useful function.

No impression had been made on the hyperextended metacarpo-phalangeal joints by splinting and recourse was had to operation. The operation devised and described by Gordon Shaw in THE MEDICAL JOURNAL OF AUSTRALIA had been carried out at each joint except the first and second. The extensor tendons serving the index finger had been widely destroyed and no good purpose would have been served by mobilizing the metacarpo-phalangeal joint of this finger. A very excellent result was obtained with this operation and full voluntary movements had followed at the joints operated upon.

At this stage the patient could half close the hand, but owing to the fact that the intrinsic muscles of the thumb were totally atrophied, this digit was held tightly at the side of the hand in the position typical of full median paralysis.

In order to give the patient a chance of using the thumb in conjunction with the fingers further operation had been carried out on January 18, 1927. The scar tissue had been dissected away from the back of the hand and the insertions of the *opponens pollicis* and *flexor brevis pollicis* had been stripped off the metacarpal bone. This had allowed the thumb to be swung around into a position of abduction. The first carpo-metacarpal joint had been opened and the metacarpal bone of the thumb freed from the carpus. A bony bed had been gouged out for the base of the metacarpal towards the middle of the front of the carpus. The base of the metacarpal had been divided in an oblique direction to give the greatest area possible of raw bone and it had been placed in the bony bed. It had then been possible to bring the tip of the middle finger into full apposition with the tip of the thumb. In order to cover the raw surface left on the back of the radial surface of the hand, the index, metacarpal and finger had been amputated after the skin was stripped off the finger. This had allowed the raw surface to be well covered. The flap was sewn in position and the thumb retained in the position of abduction and opposition with its tip opposite the middle fingers by means of a plaster cast. Bony ankylosis had been well established in eight weeks and the splint was removed in a further few weeks.

The thumb in its new position allowed the patient to use it in grasping moderate sized articles. The *flexor longus pollicis* functioned well in spite of its transposition. The result was not so successful functionally as Dr. Glissan had hoped owing to the fact that the presence of the rigid and extended forefinger masked the absence of abduction and adduction at the metacarpo-phalangeal joint of the middle finger. This absence became evident when the index was removed and marred the interaction between the thumb and middle finger.

Skiagrams.

DR. B. J. HARRISON showed a series of interesting skiagrams. Among these were several depicting myeloid carcinomata before and after treatment by deep X ray therapy. In one instance the upper ten centimetres of the humerus were involved and everything except a shell of the head of the bone had disappeared. One exposure to deep X rays had been made, a full dose being given. All pathological swelling had subsequently disappeared and in a second skiagram new bone could be seen, but a malposition had resulted. A new growth of the lower end of the femur had been treated by two full exposures to deep X ray therapy at an interval of three months. A diminution in size had occurred and dense bone was forming.

In another set of skiagrams Dr. Harrison demonstrated a typical lesion associated with a joint affected by hæmophilia. This lesion consisted in a rounded punched out area on the epiphysis.

Cholecystography.

DR. ANDERSON STUART discussed radiography of the gall bladder by means of sodium-tetra-iodo-phenolphthalein and showed a number of skiagrams illustrating various pathological conditions of the gall bladder.

He explained that the drug when absorbed into the blood, was almost entirely excreted by the hepatic cells of the liver into the bile stream which was rendered opaque to X rays owing to the high iodine content.

The test was contraindicated only in those patients who were so ill that a large dose of almost any drug would be dangerous.

Dr. Anderson Stuart stressed the point that only films of the highest technical order were of any use for diagnosis. If the technique were properly carried out a normal gall bladder would cast a shadow as dense as that of the ribs. If the shadow was any less dense, then there was something wrong either with the gall bladder or with the technique.

In satisfactory skiagrams information could be given as to the size, shape and position of the gall bladder. If stones were present they could be located by the negative shadows which they cast, since they were surrounded by the opaque bile.

When no shadow was cast after two doses of the dye, pathological changes were always present. Generally either a stone was present in the cystic duct or the lumen of the gall bladder was occluded by some abnormal condition.

Dr. Anderson Stuart stated that the test formed a very definite advance in the diagnosis or exclusion of lesions of the gall bladder. Before its introduction he considered that in expert hands about 40% of gall stones were visible by ordinary methods of X ray examination. In hospital practice this figure probably was not higher than 10% to 20%. Since the advent of this method he considered that 95% of the patients going to operation would be found

to have a correct diagnosis. Many patients, however, with a diagnosis of chronic cholecystitis were not operated on and it was in these that the radiologist was confronted with most difficulty and was most liable to make an error. However, taking into consideration all patients examined for gall bladder disease, whether operated on or not, he considered that in at least 85% the diagnosis could be made with certainty and accuracy.

He also pointed out the value of giving a barium meal in conjunction with the performance of this test in those patients with rather indefinite symptoms. Irregularity of either the gall bladder or duodenal bulb could then be shown and both could be palpated under the screen and any tender point exactly located.

Dr. Anderson Stuart finally emphasized the fact that this test was as yet in its infancy and that many mistakes were bound to occur. However, if the physicians and surgeons would make a point of letting radiologists know their mistakes, he felt sure that the radiologists would all appreciate it and it would certainly help them to progress towards a sounder knowledge of the gall bladder.

Cancer of the Stomach.

DR. O. A. A. DIETHELM showed a female patient, aged sixty-eight years, who had been admitted to hospital on April 29, 1927. Her previous history and her family history were devoid of clinical interest. She complained that her skin had been yellowish for the previous twelve months. She had become breatheless on exertion. For ten months she had suffered from attacks of abdominal pain, diarrhœa and vomiting. Three of these attacks had lasted for a period of ten days. She had not vomited any blood. For the previous two months her appetite had been poor. During the previous twelve months she had lost 25·2 kilograms (four stone) in weight, but still weighed more than 69·3 kilograms (eleven stone). On examination it was seen that her teeth were false and that her mouth contained no stumps. The tongue was glazed and red and the papillæ were absent. On examination of the abdomen a thickening which was by no means definite, could be felt over the pyloric end of the stomach. There was no tenderness. The spleen and liver were not enlarged. Examination of the lungs revealed no abnormality. The cardiac apex beat was 11·25 centimetres (four and a half inches) from the middle line. The sounds were faint. A systolic murmur was present over the apex and over the tricuspid area. Slight œdema of the legs was present. The systolic blood pressure was 145 and the diastolic pressure 90 millimetres of mercury. The patient was in the habit of rising in the night to pass her urine, but the urine was not abnormal. The skin was slightly tinged with jaundice and the Van den Bergh test had yielded a direct positive result.

On May 2, 1927, a blood count had yielded the following results:

Erythrocytes per cubic millimetre	3,300,000
Hæmoglobin value	60%
Colour index	0·9
Leucocytes per cubic millimetre	13,000
Neutrophile cells	71%
Eosinophile cells	2%
Lymphocytes	25%
Large mononuclear cells	2%

Anisocytosis had been present. No nucleated red cells were seen, but an occasional macrocyte was found. The amount of resting juice recovered on examination of the gastric contents was eighty cubic centimetres. Free hydrochloric acid was absent and lactic acid was present. Much fresh blood and mucus were present. The total acidity was 25. Oppler-Boas bacilli were present in the gastric contents. Lactic acid had been found in a fractional test meal throughout which free hydrochloric acid was absent. On X ray examination of the stomach an irregularity of the pyloric third had been discovered. This suggested chronic ulcer with spasm or carcinoma, probably the latter. A reaction had been obtained when the benzidine test for occult blood was applied to the fæces.

Dr. Diethelm said that the main interest lay in the fact that though no definite mass could be found, chemical examination of the gastric contents and of the fæces sufficed for a diagnosis. This was confirmed by X ray examination.

Pernicious Anæmia with Splenomegaly.

Dr. Diethelm also showed a female patient who was suffering from pernicious anæmia with splenomegaly. The history of this patient will be published in a subsequent issue.

Von Recklinghausen's Disease.

DR. V. M. COPPLESON showed a patient who was suffering from von Recklinghausen's disease with typical multiple neuromata. Several tumours had been removed from the upper root of the cervical plexus and the diagnosis had been confirmed by the microscopical examination of sections.

Congenital Abnormality.

Dr. Coppleson also showed two patients who were suffering from congenital abnormalities, one from complete transposition of the viscera and the other from complete syndactyly.

Subacute Combined Degeneration of the Cord.

DR. J. T. TANSEY showed a male patient, aged fifty-six years, who had come under observation, complaining of sensations of tingling and numbness in the finger tips. He said that the interest of the case lay in the fact that such subjective sensations occurring in the periphery of the limbs and coming in the sixth decade of life were very suggestive of subacute combined degeneration of the cord with its associated blood condition, pernicious anæmia. In this condition such subjective phenomena were constantly an early symptom; they were so discomforting to the patient and so persistent that they formed a distinctive feature of the disease. The patient's skin showed a distinct tendency to the characteristic biscuit-like discoloration, whilst the tongue presented the usual smooth glazed appearance. Fractional test meal examination had revealed an achlorhydria; an attempt to isolate an hæmolytic streptococcus from the duodenal contents had been unsuccessful. Dr. Utz had done a full blood count and reported as follows:

Red blood cells per cubic millimetre	3,000,000
Hæmoglobin value	60%
Colour index	1·0
Leucocytes, per cubic millimetre	6,200
Neutrophile cells	47%
Lymphocytes	46%
Eosinophile cells	4%
Mononuclear cells	3%

Moderate poikilocytosis and anisocytosis were present. No nucleated red cells were seen. The neurophile cells were characterized by definite lobulation of their nuclei. There were numerous macrocytes present. The result in Dr. Utz's opinion was strongly suggestive of early pernicious anæmia.

Neurological examination had revealed no positive evidence of structural alteration in the lateral and posterior columns of the spinal cord. In spite of these findings Dr. Tansey thought that the patient's subjective phenomena, the skin discoloration, the tongue condition, the achlorhydria, the blood count, definitely indicated an early pernicious anæmia with an early subacute combined degeneration of the cord.

Hæmorrhage into the Spinal Cord.

Dr. Tansey also showed a male patient, aged thirty-four years, who had been admitted to hospital complaining of loss of power in both lower limbs. On admission to hospital there had been practically complete loss of power of voluntary movements in both lower limbs and positive evidence of an organic lesion of the pyramidal tract in the form of absent abdominal reflexes and an extensor plantar reflex on both sides. Examination had revealed a loss of cutaneous and deep sensibility over the whole of both lower limbs and extending on the trunk to a level corresponding to the peripheral area of distribution of the tenth thoracic segment. Over this area there had been apparently complete loss of appreciation of tactile, thermal and painful stimuli and loss of appreciation of the vibrations of a tuning fork with loss of sense of position and passive movement of the joints. There was loss of control of the organic reflexes. Since admission to hospital the

power of voluntary movement in the lower limbs had definitely improved. Dr. Tansey expressed the opinion that the condition was unquestionably one of hæmorrhage into the spinal cord at the level of the eleventh thoracic segment. X ray examination had revealed no bone lesion of the spinal column.

Syphilitic Aortitis.

DR. TANSEY also showed a male patient, aged forty-five years, who had come under observation complaining of shortness of breath and swelling of the lower limbs. The patient stated that up till eight weeks previously his health had been good and that he had been able to carry on his usual occupation without any discomfort. Dr. Tansey said that clinical examination revealed all the classical signs of an aortic regurgitation. Changes such as these coming on in mid-life, namely between the period of rheumatic affections and that of atheromatous changes, immediately suggested a syphilitic origin. Syphilitic infection sixteen years previously was acknowledged and the serum had given a strong reaction to the Wassermann test. A history had been elicited of typical tabetic lightning pains of five years' duration; this was about the average length of time during which symptoms of syphilis of the central nervous system preceded those of syphilitic aortitis. Neurological examination revealed an absence of the pupillary light reflex and an absence of the knee and ankle jerks.

Paralysis Agitans.

Dr. Tansey's last patient was a woman, aged forty-six years, who had come under observation complaining of general weakness. Examination revealed the characteristic fixed, anxious, mask-like expression of Parkinson's disease. There was a definite stiffness of the neck muscles which caused the head and neck to be carrried in one piece with the trunk as if the patient were a statue. On voluntary movement a coarse rhythmical tremor of the hands was obvious. A certain amount of stiffness of the muscles of the limbs could be appreciated on attempting passive movement. While not typically festinant in character the gait revealed a lack of spring and suppleness. It was not possible to elicit a history of any previous illness at all suggestive of an attack of *encephalitis lethargica*. Dr. Tansey concluded that the condition was one of primary *paralysis agitans*.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on June 13, 1927.

The following degree was conferred *in absentia*:

Doctor of Medicine (M.D.): Professor Raymond Arthur Dart, Dean of the Faculty of Medicine, University of the Witwatersrand, Johannesburg, South Africa.

The following diplomas were granted:

Diploma in Public Health: Dudley William Little, M.B., Ch.M., Linda Victoria Magee, M.B., Ch.M., Roy William Thompson, M.B., Ch.M.

As time did not permit of the appointment of suitable delegates, it was resolved to express regret that the University could not be represented at the Centenary Celebrations of the Universities of Louvain and Innsbruck to be held this month or at the International Congress of Zoology to be held at Budapest in September next.

Leave of absence for the year 1928 was granted to Dr. J. C. Earl, Lecturer and Demonstrator in Organic Chemistry.

It was resolved, in view of the national importance of the investigation, to approve the request of the Council for Scientific and Industrial Research that the Professor of Organic Chemistry be permitted to undertake the supervision of the chemical work in a comparative study of Australian and Virginian tobacco leaf.

A letter was received from Sir Donald MacAlister, Vice-Chancellor of the University of Glasgow, expressing on behalf of the Senate of that University, and on his own behalf, sincere condolence in the loss sustained by the death of the late Professor Lawson.

Dr. P. A. Ash was appointed to represent the University at the Centenary Celebrations of the University of Toronto to be held in Toronto, Canada, in October next.

The following appointments were confirmed:

Miss H. Hunter as Recorder and Librarian in the Department of Anatomy.

Dr. R. E. Nowland as part-time Demonstrator in Anatomy.

Dr. Constance D'Arcy and Dr. A. J. Gibson were appointed Examiners in Clinical Obstetrics for the forthcoming Final Degree Examination in Medicine.

The Peter Bancroft Prize was awarded to Dr. H. J. Wilkinson for his theses on "The Innervation of Striped Muscles" and "The Argyll-Robertson Pupil." The examiners reported that Dr. Wilkinson was possessed of the true spirit of research and that his theses constituted a definite contribution to the knowledge of the subjects mentioned.

Position of Vice-Chancellor.

The Senate of the University of Sydney has had under consideration for the past two years the question of filling the position of Vice-Chancellor of the University upon the retirement of Sir Mungo MacCallum at the end of the current year.

It was decided to offer the position to Professor R. S. Wallace, M.A., President of the Professorial Board in the University of Melbourne.

Professor Wallace's record shows that he has had a very thorough and liberal education in arts, more particularly in classics and English, in which he has specially distinguished himself and he has also a colloquial and literary knowledge of French, German and Italian. His published works prove the soundness of his scholarship. He has had experience of four types of University—in Scotland, in England, in Germany and in Australia. At the close of his war service he was selected by the military authorities for the position of Director of the Australian Corps Central School at Rue in France, where he organized the school as a training centre for matriculation, accountancy and civil service examinations, bringing the school back to Australia in October, 1919.

The new Vice-Chancellor was born on August 1, 1882. His university education was commenced at the University of Aberdeen where he graduated as Master of Arts in 1904 with first class honours in English language and literature. From Aberdeen he proceeded to Oxford, where he gained a classical exhibition at Worcester College and afterwards the Douglas Jerrold Exhibition in English at Christchurch and where he studied under the late Professor Sir Walter Raleigh, the late Professor A. S. Napier, the late Dr. Henry Sweet and Professor E. de Selincourt. At Oxford he was awarded his M.A. degree with first class honours in the School of English Language and Literature. In 1907 he was appointed assistant to Professor Grierson as Lecturer in English. At the age of thirty he was appointed to the University of Melbourne as Professor of English. In the southern city he became Dean of the Faculty of Arts two years after his appointment and later Vice-President of the Professorial Board. He has been President of this Board since 1925. In addition to his professorial duties, Professor Wallace is well known as the Chief Censor for the Commonwealth Government of Cinematograph Films.

Professor Wallace has accepted the position and will take up his duties from the beginning of 1928.

Correspondence.

SNAKE BITE.

SIR: I have read with interest in your issue of June 12 letters from Drs. Palmer, Kerr and Pern in response to my notes of May 21 on this subject and venture to trespass

on your space once more as the importance of the subject justifies the fullest discussion.

I wish to emphasize my previous statement that to be sure of inoculation the snake must bite into the tissues and necessarily hang on until forcibly dislodged, with which statement I note Dr. Palmer agrees in part. In support I quote one of the earliest recorded cases of snake bite known to me, which occurred when Saint Paul was shipwrecked on the Island of Malta:

> When Paul had gathered a bundle of sticks and laid them on the fire, there came a viper out of the heat and fastened on his hand.
>
> And when the barbarians saw the venomous beast hang on his hand they said among themselves: "No doubt this man is a murderer, when though he hath escaped the sea, yet vengeance suffereth not to live."
>
> And he shook off the beast into the fire and felt no harm.
>
> Howbeit they looked when he should have swollen or fallen down dead suddenly, but after they had looked a great while and saw no harm come to him, they changed their minds and said that he was a god.
>
> ACTS XXVIII, 3-6.

Perhaps Saint Paul did not receive a minimum lethal dose, though the Maltese from their previous experience of viper bites were of opinion that he had done so and expected a rapid and nasty death for him in consequence.

The structure of the poison fangs in all our Australian venomous snakes, except the death adder, is such that the exit of the duct is half way down the fang (in the adder it is at the tip), so that unless the fang is well embedded there is no inoculation, though there certainly may be a partial intracutaneous inoculation in cases of partial bite. I do not infer that such intracutaneous inoculation may not prove lethal. The contrary is proved by Dr. Palmer's interesting case of death following scarification through a quantity of venom lying on the skin (that is, vaccination). Any wound, even an abrasion, is dangerous in the presence of snake venom.

The toxicity of the venom of our snakes varies. Speaking from memory, I understand that Dr. Tidswell stated that no case of death has been recorded following the bite of a black snake (the record in these cases being police reports and coroners' findings). In spite of this, the man outback does not regard the black snake with any feeling of friendship, though it is well known that this species is inoffensive and will only attack if molested. The death adder is sluggish and must be actually touched before he responds. The tiger snake will show fight and attack before the intruder is aware of his presence.

The layman regards the order of danger to be (1) death adder, (2) tiger snake, (3) brown snake and (4) black snake.

I can recall numerous instances of horses, cattle, sheep and dogs having been fatally bitten by black snakes. The snake often is seen and killed by an onlooker as evidence. Perhaps after all the attitude of the man outback may be correct.

I am obliged to Dr. Kerr for discussing the question of the diagnosis of inoculation with snake venom. In reply to his query I am prepared to state dogmatically that if on release of the tourniquet there is no collapse the patient has not been inoculated.

To elaborate this I give the history of the second case referred to in my previous letter.

A boy, *ætatis* twelve years, was definitely bitten by a young black snake and first aid was efficiently applied. I met the case on the road to town and transferred him to my car. The boy conversed cheerfully and was apparently quite well—so much so that I remarked to him that he had not been bitten at all. Following that remark I released the ligature. In a few seconds he collapsed and vomited. I immediately reapplied the tourniquet and wasted no time in covering the remaining miles to hospital, where I was in a position to treat the collapse ensuing on further and successive releasing of the tourniquet.

The clinical manifestation thus experienced was sufficient to convince me of the diagnosis and in not a few cases since I have made a practice of following the same procedure for diagnostic purposes solely.

As regards actual treatment I note that Dr. Pern has long realized the futility of scarification and rubbing in of potassium permanganate. He has indicated a most effective method by infiltrating the tissues around the site of inoculation with a saturated solution of permanganate of potash. This will accomplish what application to a scarification is intended and fails to do—namely, oxidize the venom *in situ* whether it be subcutaneous or intracutaneous. This infiltration should be adopted as routine treatment in every case, whether previously scarified or not.

There is only one certain and effective method of treatment and unfortunately it does not yet obtain in Australia, that is the use of antivenin.

Antivenin is universally used in India and there are many recorded cases of patients who must have received lethal doses of venom (*vide* new "Medical Annual" for 1927).

Might I humbly suggest that, as the matter is of such importance, the Director of the Commonwealth Serum Laboratories have his attention directed to it. A pronouncement from him as to the possibility of manufacture of a serum polyvalent against all species of Australian venomous snakes would be authoritative.

If such a serum is a possibility, the next step is its manufacture and distribution.

This would certainly save lives. An immunizing serum might also be a possibility and would I am sure be welcomed by thousands of men working in parts infested with snakes. Many such men have asked me for a cure for snake bite, to be used by themselves when alone in the bush miles from skilled assistance. These are the people who arm themselves with an outfit containing a lancet and a supply of Condy's crystal.

Would any of your readers be prepared to trust the saving of their lives to the carrying of this in their waistcoat pocket?

Yours, etc.,

A. MACINNES.

Collaroy, New South Wales.
June 12, 1927.

SIR: In reading Dr. D. P. O'Brien's letter of June 18 I am undecided whether he is trying to pull our legs, metaphorically speaking, or whether somebody has succeeded in doing that to him. That he should seriously lay himself out to describe just how a snake does bite and advises us to treat our cases with assurance and stimulants is hard to understand. I have in my possession a fang I took from a large puff-adder which is three-quarters of an inch in length, and is perforated through like a hypodermic needle. Of what use would assurance and stimulants be in case of being bitten by such a snake? There are no snakes to my knowledge with fangs in the lower jaw, the poison glands being modified parotid or labial glands. That it is possible for a snake to lacerate its mouth by gnashing its teeth is rather remote, as when the mouth closes the fangs lie back in the roof, only becoming erect when the mouth is open. Even if it did so it is highly improbable that snake venom is poisonous to the snake. Not long ago I picked up a five foot tiger snake and cut its fangs out with my pocket knife; this snake I carried to the drafting yards and threw down near the men working there. It was very much alive and had to be despatched with a stick later. In spite of having its mouth lacerated, it showed no reaction to its poison.

Snake charmers in the East take the precaution of tearing out the fangs of their cobras. This has to be done repeatedly as snakes like sharks are capable of reproducing fresh ones and the laceration caused thereby does not lead to their undoing.

The sudden death of Dr. O'Brien's snake is far more likely to be the result of injury received at the hands of

his snake charmer friend, particularly as snake bite does not cause sudden death.

Lower animals are very resistant to poisons which are deadly to higher ones. Pigs are practically resistant to snake venom. Having captured a fourteen foot python I was almost in despair how to kill it without mutilating it too much, so I tied its head to a verandah pole and got half a dozen kafirs to hang on to the snake whilst I prized its mouth open and administered a teaspoonful of cyanide of potassium. It quietly ejected this and showed no reaction whatever to the poison. I ended up by cutting it open and removing its heart. Nicotine is perhaps the most rapid and deadly poison to snakes. Some snakes have the power of forcefully ejecting their poison. The distance they can do so is rather surprising as was illustrated by a case I saw during the Boer War. Whilst going the rounds of a line of block-houses a "Tommy" asked me to look at his eye, which was very inflamed. He said that the night before he was killing a snake and had it at the end of a broom when it sprayed his face with its poison, a little going into his eye. Fortunately not sufficient got in to do any permanent damage. Complete opacity of one or both eyes is not at all uncommon in Africa where snakes are numerous, owing to dogs barking at snakes in bushes. It is well to bear in mind this power of forceful ejection and not look upon it as a mere soaking on to the skin or clothing. I would again remark that potassium permanganate solution hypodermically is a very safe and harmless procedure. I do not think I am wrong in stating that Lauder Brunton found that equal parts of permanganate and venom neutralized one another for nearly all snakes.

Yours etc.,

SYDNEY PERN.

12, Collins Street, Melbourne.
Undated.

SIR: The discussion on snake bite has yielded some remarkable statements which merit close examination. The aboriginal patient who received heroic doses of aromatic spirit of ammonia, together with rectal injections of carbonate of ammonia, was fortunate in escaping violent emesis. Ammonia and its carbonate in cases of snake bite are useful reflex stimulants and possibly after absorption to a lesser extent direct stimulants of the cardiac and respiratory centres. Pharmacopœial doses, however, should not be exceeded. It is possible that after absorption these preparations may impede blood coagulation. Massive intravascular clotting is one of the manifestations of snake venom. On the other hand cases of snake bite occur in which diminished coagulability of the blood obtains. In such cases ammonia and its carbonate might be prejudicial.

Dr. McInnes's method of rapid immunization may be attractive, but, I fear, too uncertain for practical application, when one considers the protracted period extending over many months, required to immunize a horse. If a fatality occurred after such revolutionary treatment, a coroner might make some very unpleasant observations.

As to whether the venom is injected on, into or through the skin, depends on whether the whole fang or only the tip has penetrated the integument. The venom fangs are not canaliculated throughout their entire length, but, in Australian species have only a groove extending over portion of their extent. If, therefore, only the solid apex enter the skin, the venom will be deposited on the skin. A deeper hold will inject the venom into the skin; a still deeper insertion will inject the venom through the skin, possibly directly into the lumen of a blood vessel. A snake may only inflict a very superficial bite or it may hold on so tenaciously that it literally has to be dragged off.

Your Rockhampton correspondent makes the amazing assertion that the fangs of the brown snake are in the lower jaw. If so, science is absolutely ignorant of the fact. No known snake in the world has venom fangs in the lower jaw.

As regards local applications, ammonia and its carbonate have been used. The acidity of the venom would be thus neutralized, but its toxicity would probably be unimpaired. Chlorine and hypochlorous acid, however, definitely destroy the toxicity of the poison. "Eusol," Dakin's solution or chlorinated lime (known as bleaching powder or "chloride" of lime) could be used for the same purpose as potassium permanganate. The barbarous method of keeping the patient awake by violent means, such as loud noises, whipping, pinching, applying stinging nettles *et cetera*, although prevalent, not only amongst the laity, but also practised by the profession, can only be unhesitatingly condemned. Such methods profoundly increase exhaustion and may determine a fatal issue.

Dr. P. Cunningham, a naval surgeon, in his "Two Years in New South Wales," published one hundred years ago, relates that on one occasion he was out with his two dogs. One, a pointer, had an encounter with both a black and a brown snake and was fatally bitten. The head of the black snake was cut off with about an inch of the neck attached. The kangaroo dog then ran up and apparently trod on the detached black snake's head. It was dead in a little over half an hour. Its hindquarters suddenly became paralysed; the paralysis extended to the forequarters and the animal fell down as if in a fit. Its body rapidly swelled before death.

Yours, etc.,

JOHN MACPHERSON.

175, Macquarie Street, Sydney,
June 21, 1927.

SIR: Dr. D. P. O'Brien in his letter of June 1 writes that there is a misconception of the mechanism of snake bite and then tells us that the fangs are in the lower jaw!

As far as one can judge from the letters appearing in THE MEDICAL JOURNAL OF AUSTRALIA our venomous snakes are rather harmless creatures. If one does occasionally bite, it is only necessary to shake him off quickly and avoid all treatment, except perhaps the application of a tourniquet.

However, as I have carried out autopsies on several people dead of snake bite, I intend, should I meet with a case of snake bite, to apply a tourniquet, remove any venom on the surface, excise the bitten area and apply, if available, potassium permanganate, perhaps by infiltration as suggested by Dr. Sydney Pern.

Mr. Grant, of the Health Department, New South Wales, who has had, when working for C. J. Martin and Frank Tidswell, much experience in handling and "milking" all kinds of our venomous snakes, tells me that the tiger snake usually bites the apparatus and then lets go at once, unlike the death adder and black snake which chew and hang on with such a steady grip that the jaws have often to be separated with forceps as described by Tidswell in his little book "Researches on Australian Venoms" which is not well enough known to medical men.

He states, moreover, that the tiger snake in his rage often contracts his masseter muscles so vigorously that the venom is ejected several feet. One can therefore see that if the snake injects the venom subcutaneously in this forcible way how difficult it must be to get rid of it, especially by scarification and scraping.

Yours, etc.,

ARTHUR PALMER.

Sydney,
June 20, 1927.

[This correspondence is now closed.—EDITOR.]

Obituary.

PERCY LANGFORD TOWNLEY.

WE regret to announce the death of Dr. Percy Langford Townley which occurred at Gayndah, Queensland, on June 18, 1927.

Books Received.

AIDS TO TROPICAL MEDICINE, by Gilbert E. Brooke, M.A. (Cantab.), L.R.C.P. (Edinburgh), D.P.H., F.R.G.S.; Third Edition, Revised; 1927. London: Baillière, Tindall and Cox. Foolscap 8vo., pp. 238, with illustrations. Price: 4s. 6d. net.

THE MEDICAL ANNUAL: A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX, by various contributors; 1927. Bristol: John Wright and Sons, Limited. Demy 8vo., pp. 623, with illustrations. Price: 20s. net.

MEDICINE MONOGRAPHS: VOLUME XI: BIRTH INJURIES OF THE CENTRAL NERVOUS SYSTEM; Part I, Cerebral Birth Injuries, by Frank R. Ford; Part II, Cord Birth Injuries, by Bronson Crothers and Marian C. Putnam; 1927. Baltimore: The Williams and Wilkins Company. Royal 8vo., pp. 178, with illustrations. Price: $4.00 net.

MENTAL HANDICAPS IN GOLF, by Theo. B. Hyslop, M.D., F.R.S.E., with Forewords by Rolf Creasy, M.R.C.S., L.R.C.P., and John Henry Taylor; 1927. London: Baillière, Tindall and Cox. Foolscap 8vo., pp. 111. Price: 3s. 6d. net.

Diary for the Month.

JULY 5.—Tasmanian Branch, B.M.A.: Council.
JULY 5.—New South Wales Branch, B.M.A.: Council (Quarterly).
JULY 6.—Victorian Branch, B.M.A.: Branch.
JULY 6.—Western Australian Branch, B.M.A.: Council.
JULY 7.—South Australian Branch, B.M.A.: Council.
JULY 7.—Section of Orthopædics, New South Wales Branch, B.M.A.
JULY 8.—Queensland Branch, B.M.A.: Council.
JULY 12.—Tasmanian Branch, B.M.A.: Branch.
JULY 12.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 13.—Central Northern Medical Association, New South Wales.
JULY 14.—Victorian Branch, B.M.A.: Council.
JULY 14.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 18.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments.

Dr. W. T. Dermer (B.M.A.) has been appointed Quarantine Officer at Port Hedland, Western Australia.

* * * *

Dr. John Coffey (B.M.A.) has been appointed Deputy Commissioner of Public Health, Queensland, during the absence of the Commissioner.

* * * *

Dr. Daniel Patrick O'Brien (B.M.A.) has been appointed Government Medical Officer at Rockhampton, a Health Officer under *The Health Acts*, 1900 to 1922, Visiting Surgeon to H.M. Prison, Rockhampton, and Medical Officer, State Children Department, Queensland.

* * * *

Dr. Constantine Trent Champion de Crespigny (B.M.A.) has been appointed a Member of the Advisory Committee under the provisions of the *Hospitals Act Amendment Act*, 1921, South Australia.

* * * *

Professor Henry George Chapman (B.M.A.) has been appointed a Member of the Main Committee of the Australian Commonwealth Engineering Standards Association.

* * * *

Dr. Evitt Gordon Allport has been appointed a Health Officer to the Flinders Island Municipality, Tasmania.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx.

ALFRED HOSPITAL, MELBOURNE: Senior Registrar.

VICTORIAN EYE AND EAR HOSPITAL: Honorary Ophthalmic Surgeon, Honorary Assistant Ophthalmic Surgeon, Clinical Assistants and Medical Refractionist.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Booleroo Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to positions at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

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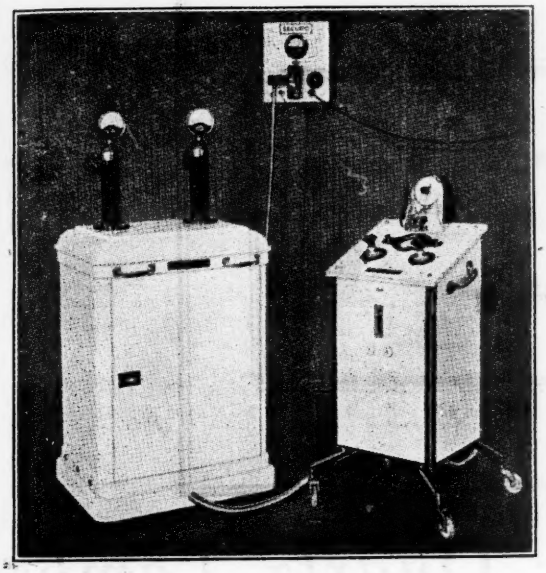

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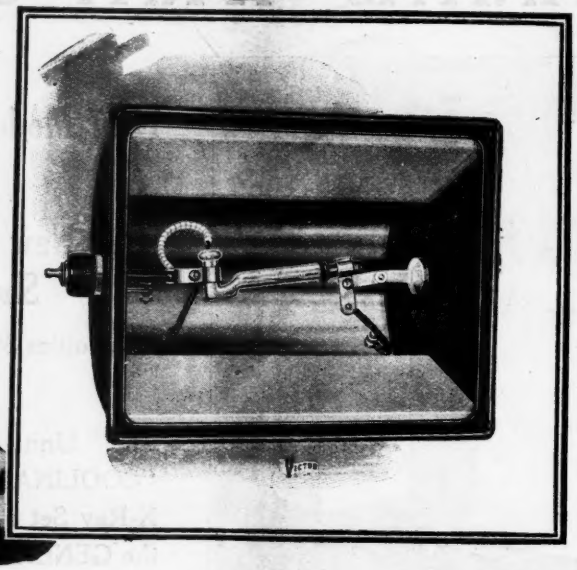

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